MISSOURI BOTANICAL GARDEN

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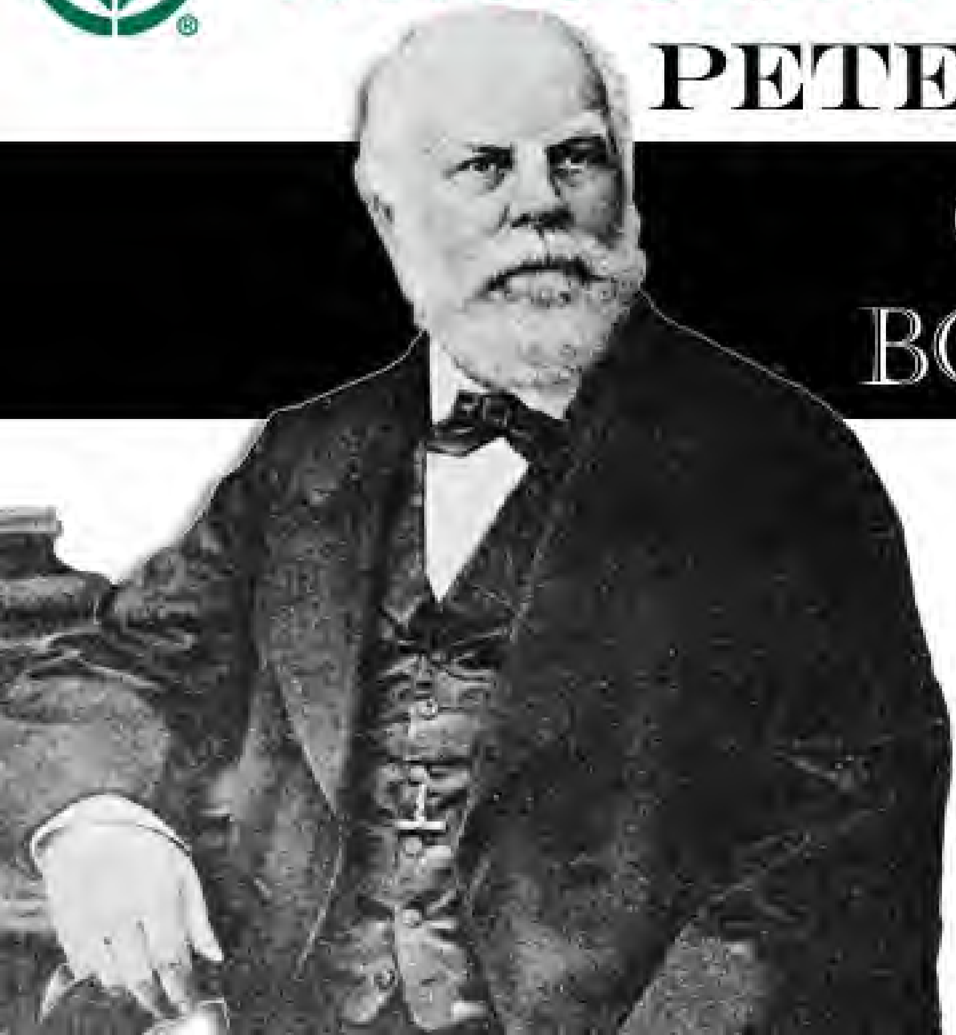
GEORGE ENGELMANN BOTANICAL NOTEBOOKS



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A. Schotts Cacteae.

Drawings 1. Opuntia fragilis El Paso
2. O. longispina, purple joints
3. O. frutescens see Remarks page 5, Tunita is the fruit
4 O. arborescens Remarks pag 6 Coyonoste is the plant
5. E. setispinus on Cretaceous rocks — see also living specimen
6. C. pulchellus Eaglepass, 13 ribs.
7. Cereus tuberosus gracilis near Mier — no specimen! & Chacon hills 3 miles below Laredo, and ridges — see No 1. (Octob 5th 1853) also letter March 29th & Jan 13th
8 Cereus (Pitallo) Organos, Cucumber plant, No 4 (Octob 5th & Jan 13th, and Remarks pag 8 single (Jan 13th last page) cespitose (remarks pag 8) — according to drawing 12 ribs high 3-4 diameter, 8 ribs sharp; 8 radial no central spines 3 stouter than the rest, 2 above, stoutest one below. about 8 stigmata — Open dry ridges.
9. Mamill. micromeris
10. M applanata.
11. M. macromeris? near Mier, seen only once No 3 (letter Octob 5th Jan 13th March 29th May 29) never seen on the upper Country! see living specimen! —
12. Anhalonium letter March 6 1853

Living specimens
5 Ech. setispinus very short central spine, very flat.
11, Mam. Macromeris? about 8-10 rad sp. ~~very~~ unequal, lowest longest, central 1-2 darker stouter; 12 rad. spines uppermost longest, hook hardly as long.
13. Cer. variabilis 3 angled — shoots slender 6-7 angled, etc. letter 13 January last page Remarks pag 8 & 9

Dry specimens
14 Echinocactus Schottii 8 ribs — No 2 in letter Octob 5th, Jan 13th and label on specimens — 8 ribs & straight spines —
15 E. flexispinus?, aculeis brevibus or ~~W~~ Wrightii"?
16. Opuntia elevata similis aculeis applanatis with fruit.

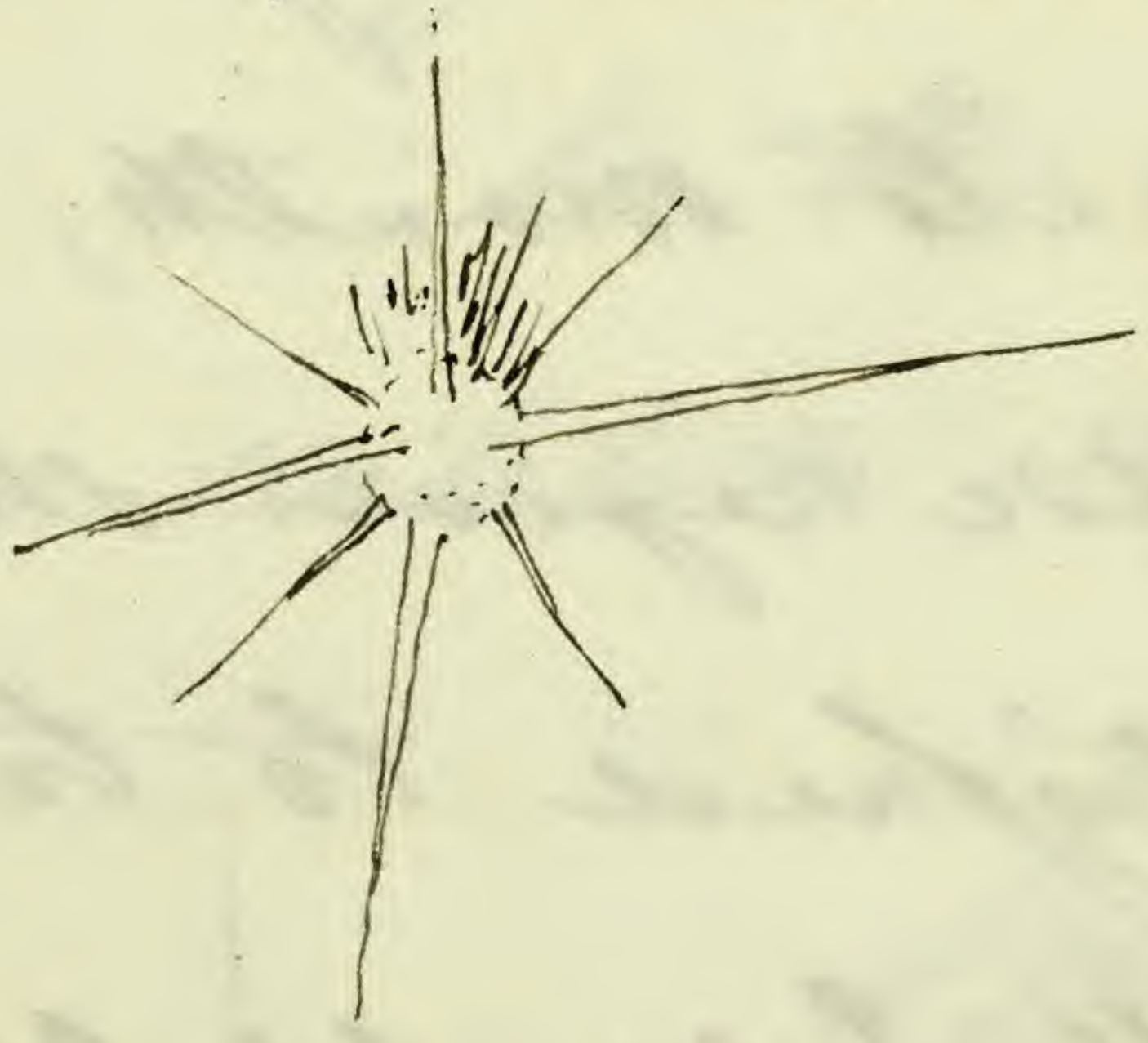
Remarks "
" 17 Nopal de Castil pag 4

14386

Opuntiae.

A. elipticae. Nopales (Mexican)

No1. O. Tuna (mihi) O. occidentalis (Engelm)
Erect, large flat joints obovate-rhomboid, very spinous, usually 4 stout spines of pale strawcolor the



lowest often reflexed. Color of the petals rich lemon tinged with brickred. Pistils and filaments rather short. Carpels ovate dark-purple invested with (spinous) prickly areolae. Pulp eatable and of a better taste than those of all the other species I had ever tasted. Much sought for by the lower class of the inhabitants.

16-20 areolae a large oval Ovary

Locality. Seabeach round San Diego. California.

14387

No 2. O. anacantha (mihi)
O. basilaris. (Engelm)

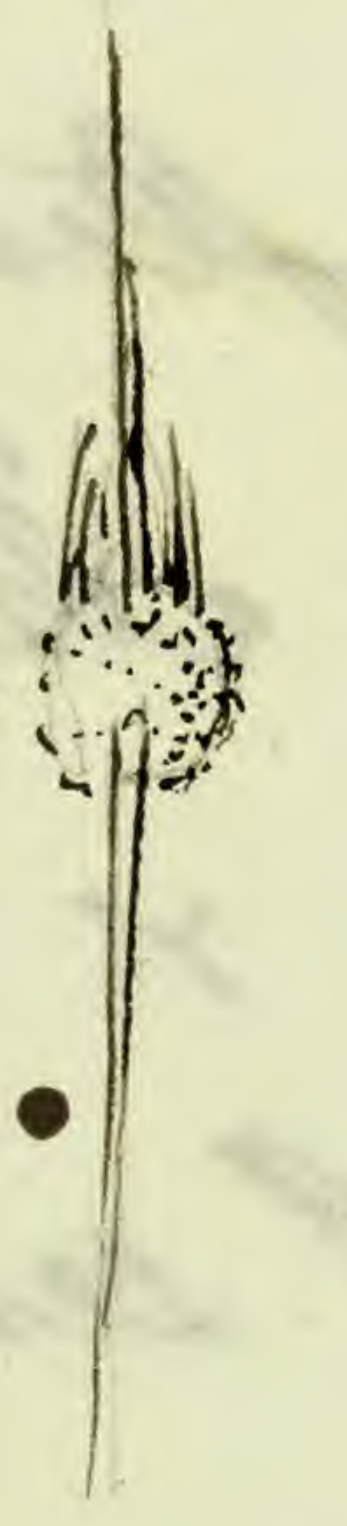
If the details sent on should proove to be different species, it is my fault, as I did not close enough compare. The one from the dividing ridge on the western edge of the Colorado desert and the other from the Gila valley about 18 miles above its mouth, which I consider the same physiographic region show much similarity, therefor I was satisfied to take only ~~blo~~ dry flowers of the latter; all I could get.

No 3. O. patens (mihi)

patula n. sp.
near mojavensis ?

Erect or subprocumbent, 3-4' high; joints like those of No 1. but less fleshy; areola less spinous (sub-nullate) occasionally from 1—4. This plant occupies sometimes very extensive patches of land, which it covers exclusively.

On the bacca of O. Tuna I often noticed a sort of scalelike stipules covering the ~~fresh~~ newly formed areola a form which I did not see on the O. patens. Flowers much like No 1. Fruits not known to me.



Locality. Mountain valleys of San Pascual & Santa Isabel. California.

No 4. O. ~~[illegible]~~ violacea. (mihi) = O. phaeacantha

Erect, 2–3'' high; joints abovate not fleshy; spines 1–5 lightbrown, red, violetcolor or atrofuscous sometimes cofébrown, also the epidermis round the areola sometimes ~~[illegible]~~ tinged with the colours mentioned. otherwise the spenes are long slender often contorted somewhat recurved or deflexed.

Flower & fruit not known to me.

According to the habitus of the plant I believe it is identic with a species appearing often farther below in the valley of rio Bravo and also in the vicinity of the Sierras de las limpias & Diabolo entirely purpurascent If I not err I sent You once the drawing of one joint upon which You ~~[illegible]~~ asked for which reason I had drawn the spine recurved. The originale of this sketch together with the above meantplant seem to be identic.

Locality. Southrange of Sierra de los Organos Near Fort Bliss. West Texas.

filipendula E

No 5. Opuntia humilis. mihi

Small plant, procumbent; joints eliptic fleshy of 1-2" diameter.

Of this plant I brought home one living joint & placed it in the care of the public gardener. I believe however it shared afterwards the fate of O. pita-hayita (mihi)

According to its habitus this plant is identic with the original of a sketch, which I sent to You in 1853 among others.

Locality. Valley of the Bravo del Norte near the Cañon. (cañon de los lamentos of the Mexican)

I send one dead dry small specimen.

Opuntiae.

O. tesselata E

B. cylindraceae. d. graciliores.

No 1. O. Scutellata. (mihi) O. ramosissima (Engelm)

No 2. O. ramossima β. setaccarpa. from the sierra Tula, wastes towards the Californian Gulf. probably only a freak of nature.

The above forms seem to take on the West slope of the sierra Madre the place of O. frutescens, which occurs here only erratic.

14388

No 3. C. sicca. (mihi) frutescens (Engelm)

GARDEN
PAPERS

O. (teretinis.) Schottii

No 4. Opuntia glabra (mihi)

Truly arborescent with one stem and crown. 7–8' high. ~~Branches~~ ramnifications divergent – divaricate; younger branches subtuberculate last years and older branches smooth, all bright green. Areola and spines resembling those of O. frutescens to which it seems to be near allied.

Flowers greenish-yellow shaded into brickred. Petals linear lanceolate – exerted.

Sceleton almost entirely solid-wooded.

Locality. Desert heights near the Maricopa villages in the Gilavalley.

Whether this species may belong to the O. grazilivires I am not certain. Its only fingerthick older and younger branches point to that arrangement, whilst the bold stem 4–5" diameter may classify this plant with the O. robustiores.

~~No~~

(B. robustiores. (Choyas of the Mexican)

No 5. Opuntia Whipplei (E&B) polytuberculata (mihi)

8 – 9 feet high dendroid, ramnification remote-divergent; joints often 1' long by 1" or little more diameter. Tubercles numerous more flat, densily arranged greyish green; areola ovate more or less spinous, spines greyish-yellow the longest 8 – 9 lines.

Inflorescence terminal; carpellum pitcher shaped frequently very much elongated as to form ~~&~~ the former clubshaped. Corolla red.

A regular desert form, though keeping more in the levels upon the drift soil between the sierras.

Sceleton reticulate.

Locality. Llanos between the Gila and Tucson.
Sonora.

mamillata

No 6. Opuntia mammillifera. (mihi)

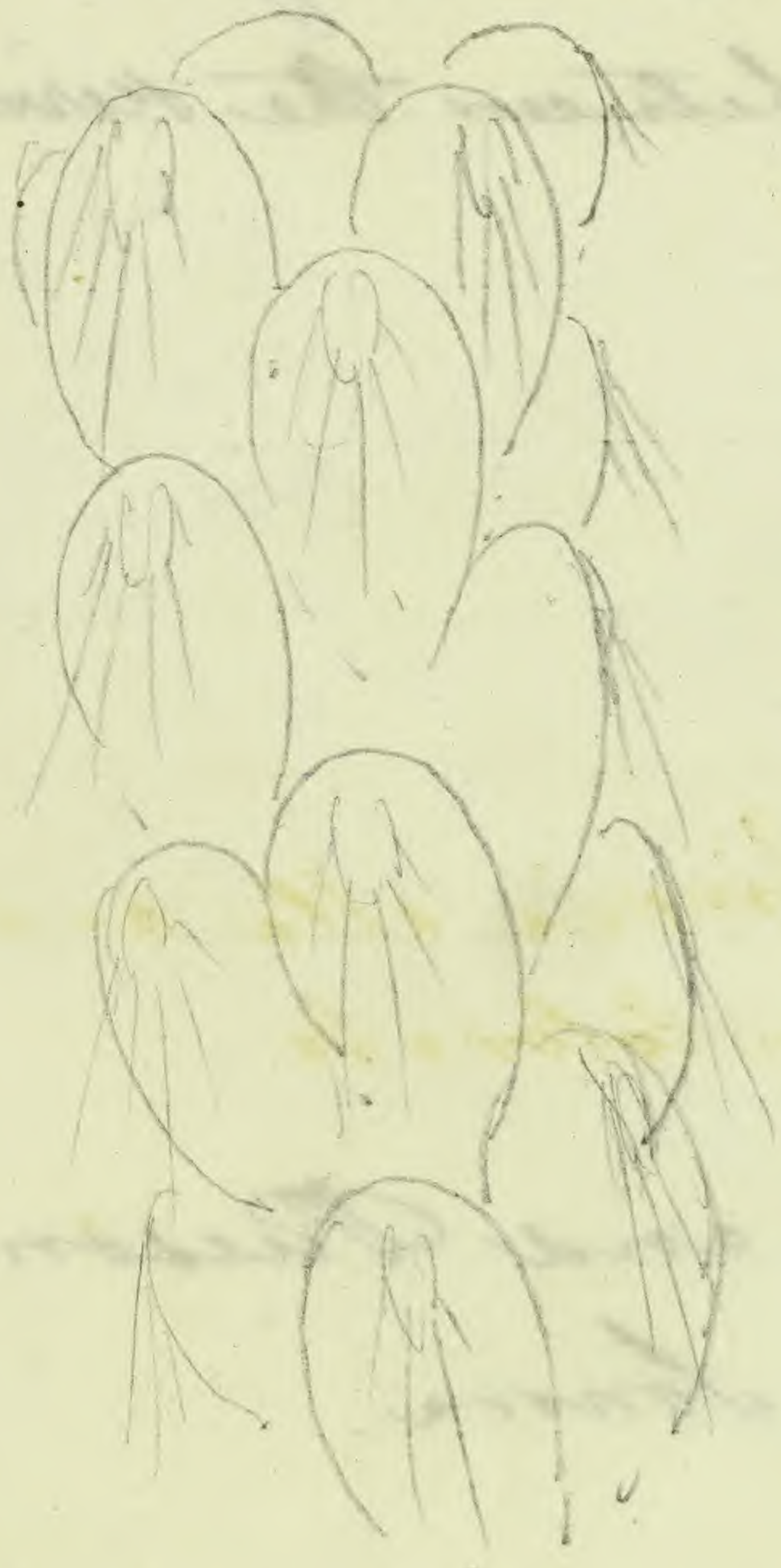
Dendroid with one stemp and densily ramnificated crown 5—6' high. Joints dark sepgreen, longest 4" by 1,5" diameter, ~~are~~ mammilla oblonge-ovate full swelling developed like a womans breast; areola ovate ~~or~~ tomentose with ~~4~~ 3—6 short lightyellow spines of which the longest are of 8''' length. All the spines reflexed.

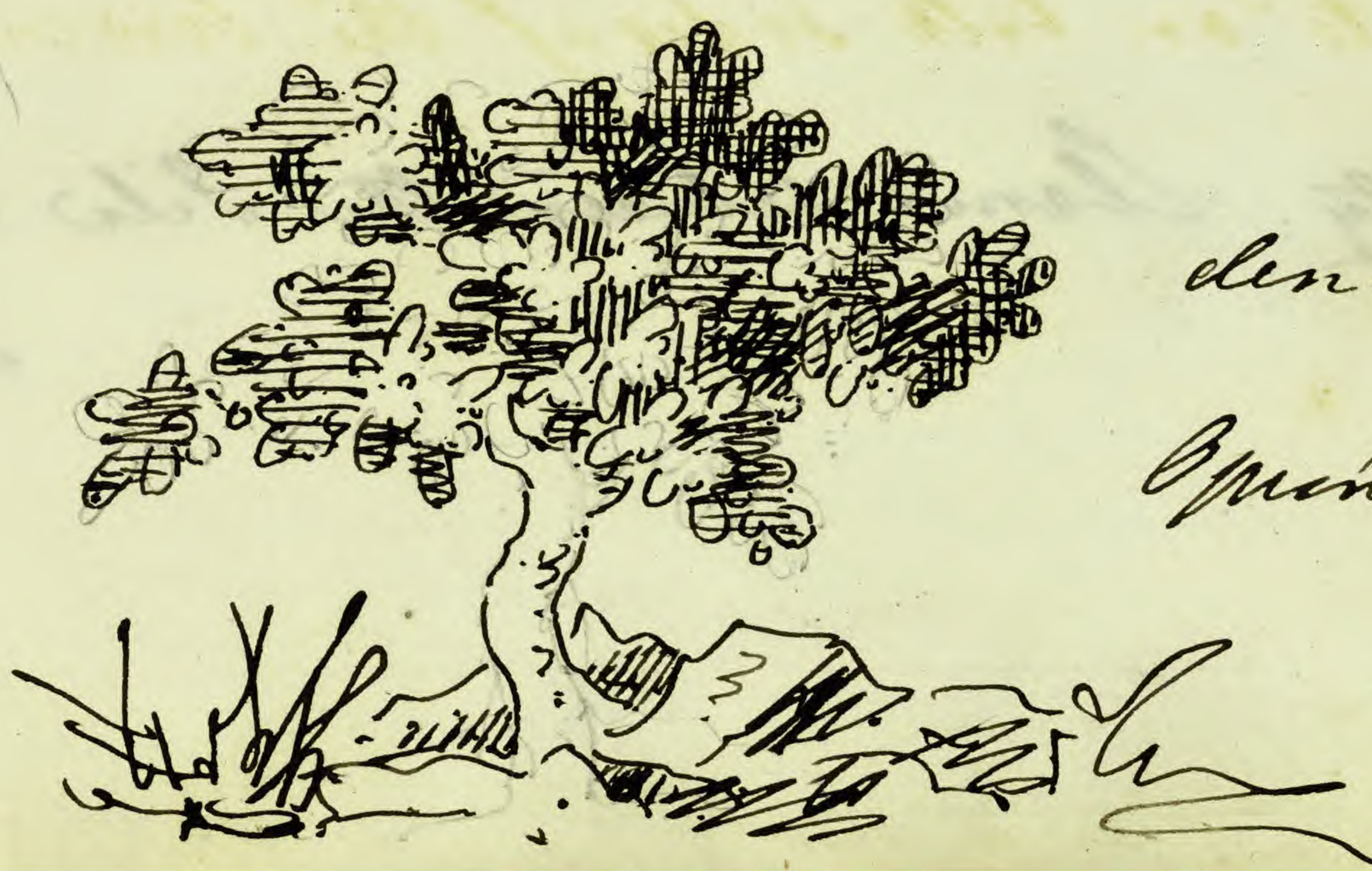
Inflorescence terminal. Petals very short hardly longer then the sepals. Corolla bright pink or purple. Bacca spinous ovate-cupshaped not or very little grooved.

14389

Locality. Southrange ~~from~~ of the sierra Babuquibari and from there South East into Sonora.

This form appears only upon better soil and where rain occurs more regular. Color, form and habits seem to point to that end.





dendroid shape of Opuntia mammillifera (mihi

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echinocarpa

No 7. Opuntia sterilis (mihi)

NB. O. sterilis of course is wrong I meant to name it O. deserthrum.

Fruticose 4–5' high virgate or divaricate joints clavate meagre 8–10" long; very tuberculous tubercles lax somewhat compressed, areola comparatively small bristled with more or less horrid ~~spi~~ and sheathed spines, the longest of which ~~are~~ measure 1,5".

Inflorescence lateral towards the upper end of the joints

Carpels deeply grooved and very spinous.

Locality Western parts of Pimeria alta and the deserts on both sides of the lower Colorado.

Bigelovii ? O fulgida

No 8. Opuntia lux Coyoti (mihi)
(Vela de coyoti of the Mexican)

Arborescent one rarely more stems. ramnification coarctate; younger and last years ~~[illegible]~~ joints very densely arranged; joints ventricose-cylindric 4–8" long often by 2" diameter; tubercles more or less dilated; areola ~~[illegible]~~ ovate-circular with 5–8 sheathed; spines of 12–15''' long. Sheaths broad strawcolored and shiny, whereby this plants appears to eyesight upon a distance of 2–3 miles.

It is not improbable that this gave rise to its popular name.

Inflorescence terminal. Corolla ~~rot~~ purple. Bacca full round, proliferous often forming ~~cluste~~ pendulous clusters of 10–12" length.

Petals linear- or clavate-lanceolate often revolute.

Sceleton reticulate.

Locality seems chiefly to belong to the basin of the californian Gulf and the lower Colorado, occupying however there more elevated positions.

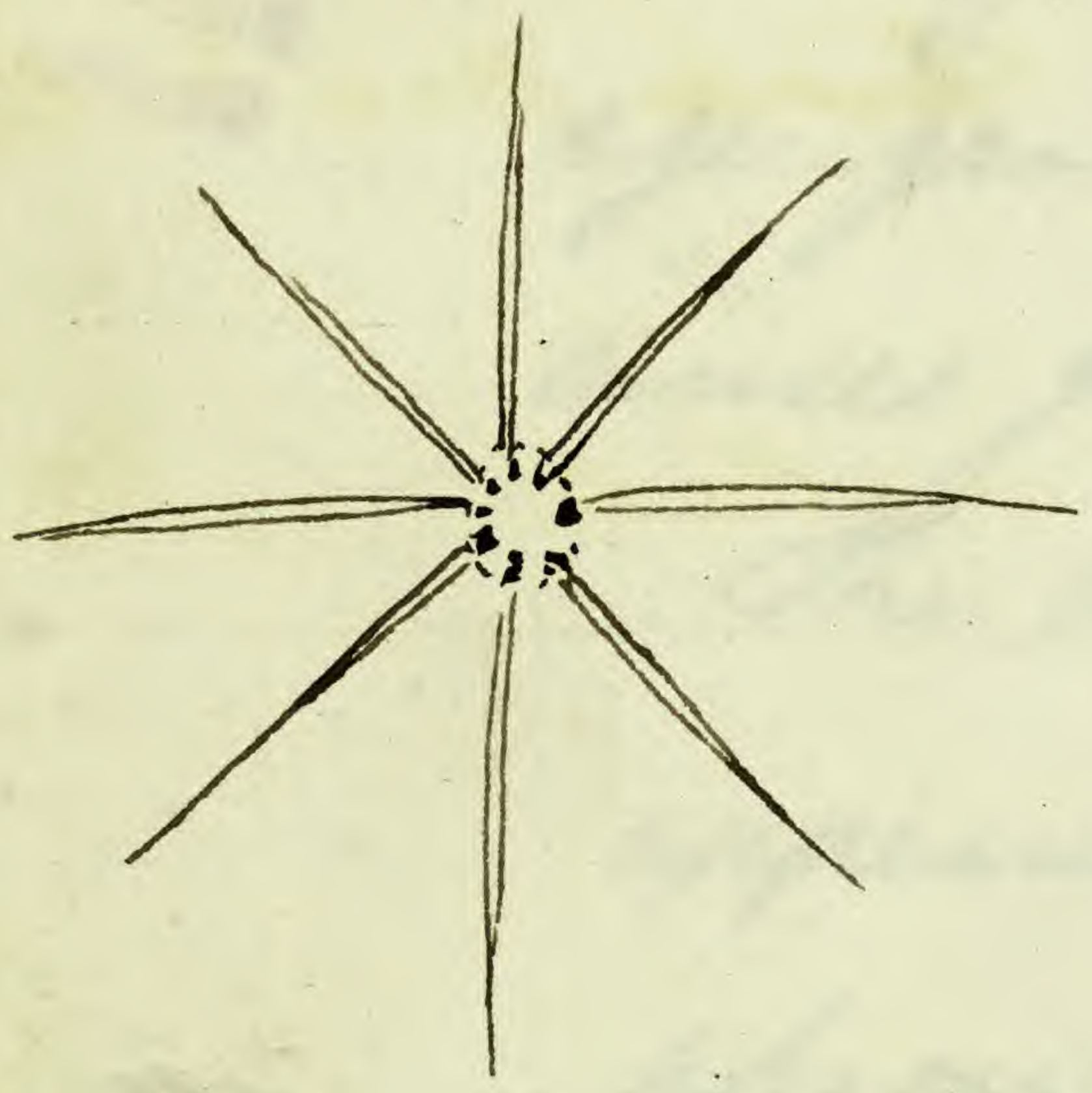
O. fulgida

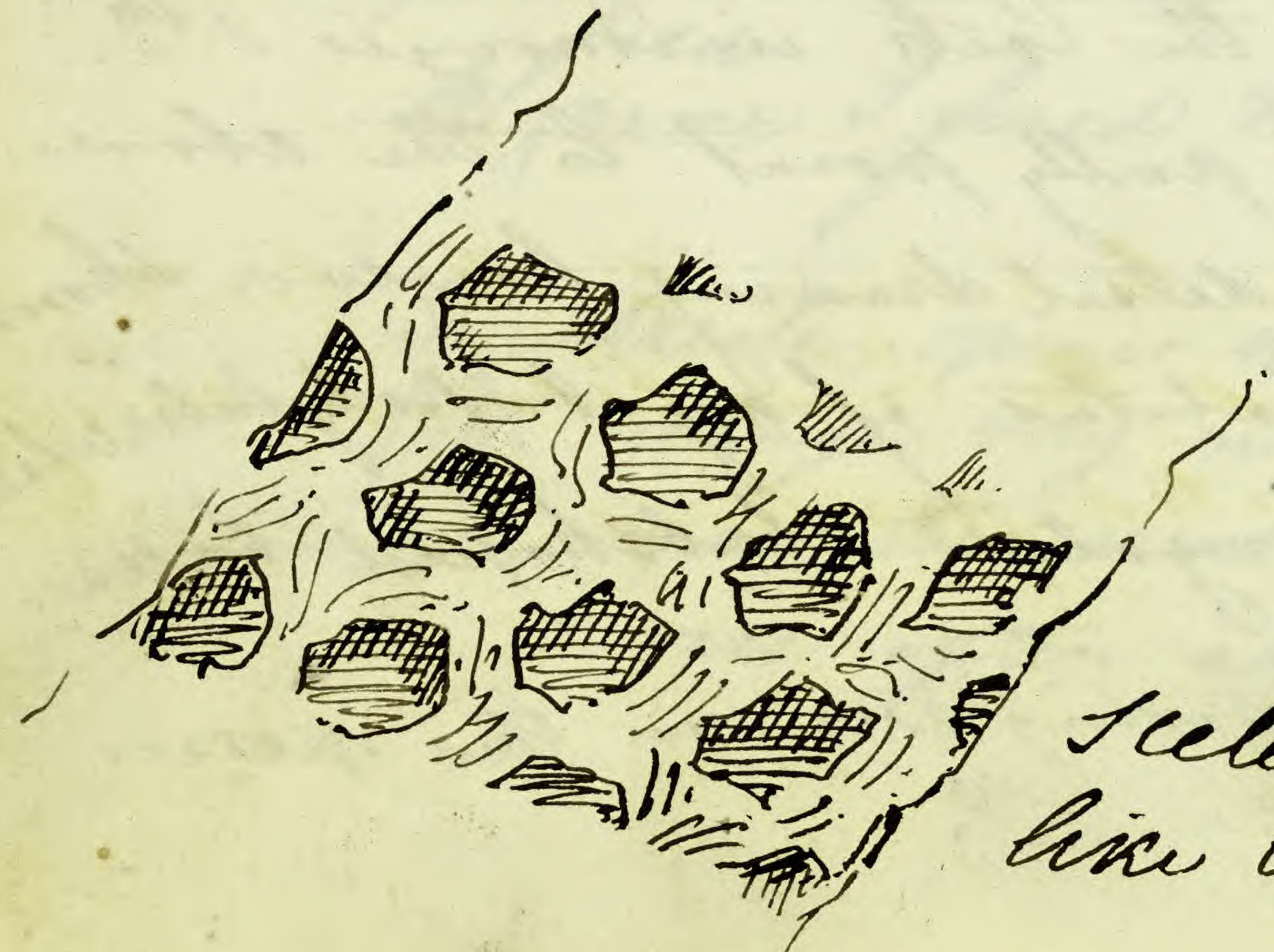
this might be O. Bigelovii

Remark to O. lux Coyoti. (mihi)

In passing over the western borders of the Colorado desert I noticed a form of a Choya (cylindric opuntia) not seen before by myself. One mainstem bore a large number of joints branching out laterally in a somewhat deflexed direction. These not of very great length gave the plant an appearance like a Sphagnum among the mosses. The ferrugineous color of its very numerous spines and consequently of the whole plant added so much to the similarity that I was tempted to name it O. sphagnoides. Discovering however no essential characters by which to distinguish it from O. No 8. I concluded it to be only a younger halfgrown form.

Areola nearly circular convex with 8–9 spines.

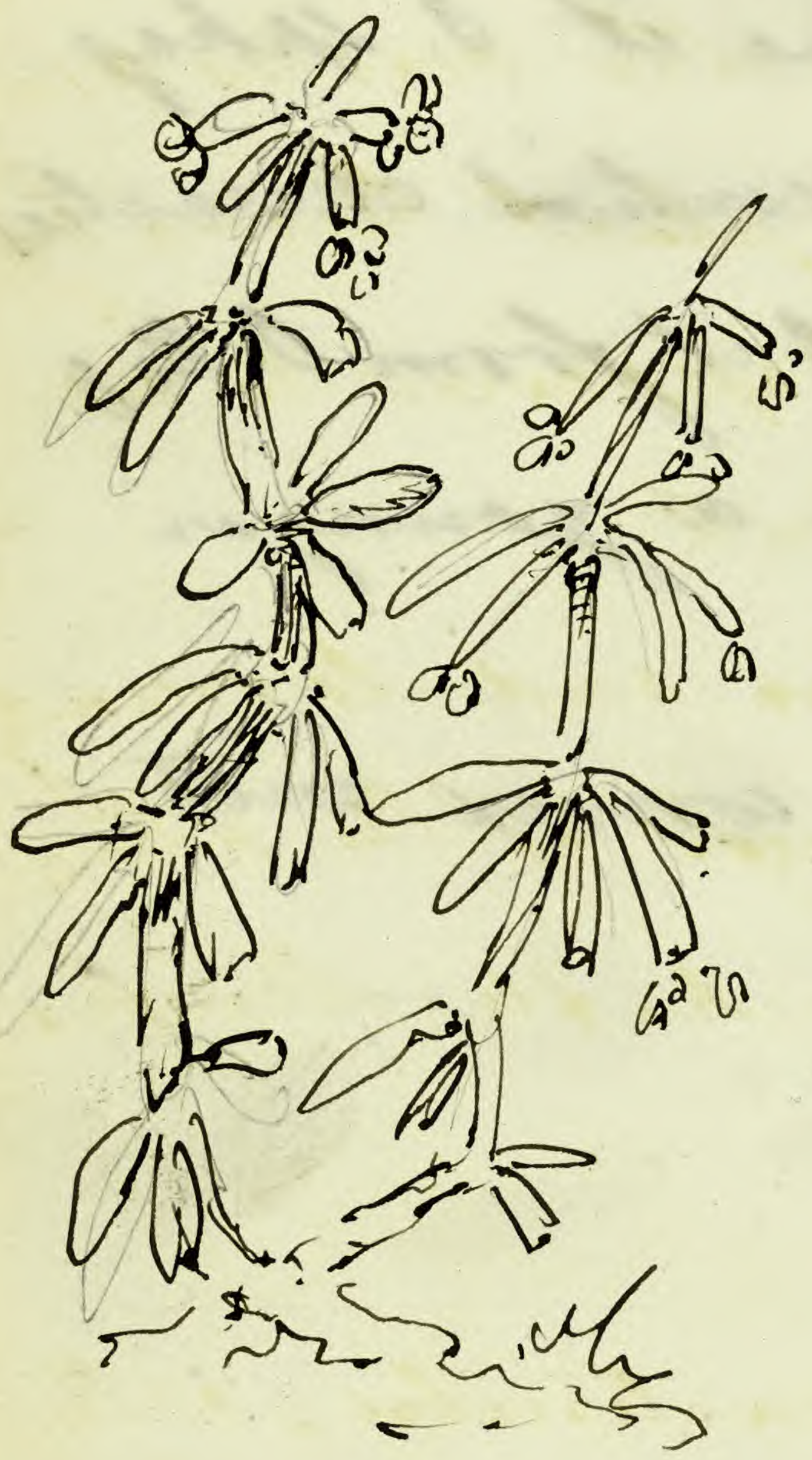




Sceleton of the above, also much like that of O. lux Coyoti.

No 9. Opuntia arborescens. (Engelm)

This plant well known already. deserves perhaps its specific name less then several others of the Croyatribe. It occurs rarely with one ~~stem~~ stem and appeared at least to me almost invariably fruticose more or less erect. A more distinct character of its habitus is the nearly strict verticillate arrangement under which are its horizontal or pendulous joints, branching out from the main joints of its stems.



No 10. of the Cacti in Emory's 1th report may partly point to the above species, the detail drawing however shows more the habitus of my O. polytuberculata with its elongated clubshaped bacca.

NB. I do not recollect of having ever seen this species on the westside of sierra Madre.

MISSOURI B[illegible]
GEORGE E[illegible]

14390

prolifera

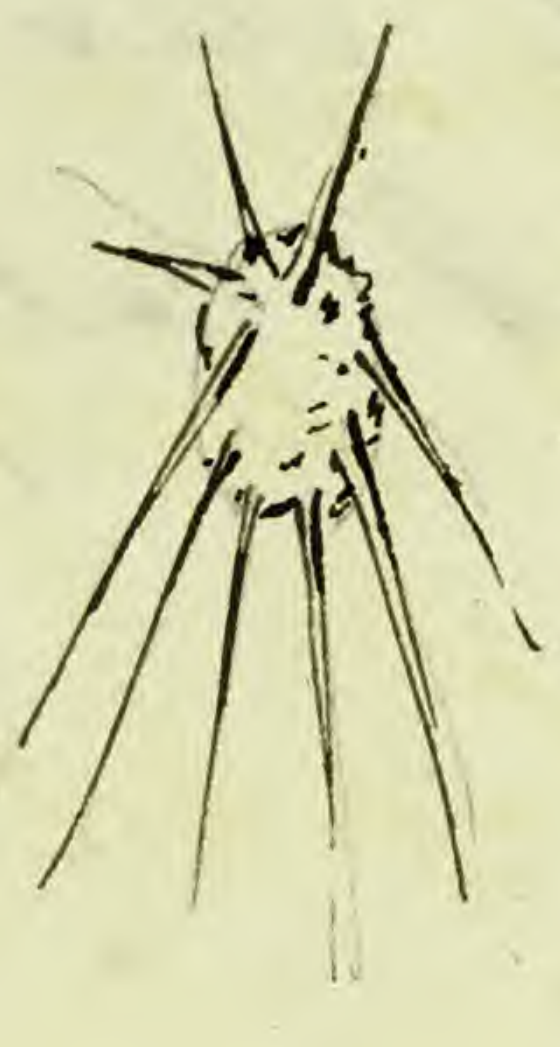
No 10. O. corallina. (mihi)

Boldest form of all the Choyas, 8–10 feet high, fruticose-divaricate much spreading ~~usually~~ ~~or~~ often occupying much space that is more then 200 □ feet. Rammification especially above very dense irregular, joints very numerous from ovate- to ventricose-cylindric 5–6" + 2". Epidermis dark but rich green.

Inflorescense of which I marked only undeveloped ~~[illegible]~~ buds in November ~~termi~~ terminal; corolla purplish.

Sceleton reticulate, dense woody. The mashes corresponding to the tubercles of the living plant become by age gradually closed, which, as it appeared to me causes finally the dying of the plant.

The large bushes round San Diego and its vicinity appeared to me often like coral-reefs of the atmospheric ocean also thus unapproachable, therefor the field name I fixed to it.



Areola, spines no essential characteristic, as they change very much in number and arrangment upon the areola. Especially are the upper ones often absent.

serpentina E

No 11. Opuntia littoralis (mihi)

Fruticose 4–5' high with a more slender ramnification then the former sometimes procumbent. Joints often 1' long by 1" diameter and mostly diverging from the mainstem under an ~~ane~~ acute angle.

Tubercles well developed, areola and spines resembling those of No 10. The latter pale yellow or rusty brown.

One single late blossom was procured, the corolla of which is variegated with lemonyellow and purple, bacca cupshaped, grooved and spinous.

This plant being the first of the cylindric Opuntias coming from the seaside I named „O. ~~litton~~ littoralis."

Inflorescence terminal and lateral.

If there is any prudence to refer to the bad illustrations of Cacti in Emory's former Report No 11. O. californica might be looked at under my No 11.

C. Opuntiae humiliores.

No 12. Opuntia glauca (mihi) Emoryi E. spinosior

Low and apparently leading a more terrestrial life no ramification, the joints proliferous, from 12–18" high. Areola concave tomentose bristling with sharp spines of a pale straw color inclining to shade a little into purple, becoming older however they all adopt a brownish grey which together with the dull grey green color of the epidermis gives the whole plant a dead-like grey appearance, hence ~~[illegible]~~ for the name.

Spines 10–12 fasciculate, erect 12–15''' long.

Inflorescence terminal; ~~[illegible]~~ bacca dry, oblong-ovate very spinous. Corolla sulfurecolored tinged with purple. Sceletion woody subreticulate decays soon.

Blooms in August & September.

Locality. Desert of the Colorado occupying there extent patches of loose driftsoil. Under the protection of this plant rabbits and other mining quadrupeds have their dwelling places, which thus form regular fortification against any intruder except snakes.

O. purpureo-spina (mihi) which I found first in a similar locality, I conclude now, must be identical with the above.

14391A

I deposited in the above sheets drawn up for Yourself the copies of fieldnotes and scetches. It was an impossibility to send You the originals, because they are all embodied in my fieldjournals together with other notes.

Posterior notes, conclusions of an eyewitness and especially more elaborate scetches or drawings, exhibiting the habitus of the plants in question, especially the larger ones as C. giganteus, Thurberi and Sina or the larger Opuntiae You must let me have more time. In my views on scenery, which shall illustrate the maps of the Boundaryline I will try to give those singular landscape-features of the country where those large cacti occupy so prominent a position.

In regard to Stanly's original drawings, I was not able to procure them. God knows where they are and ~~of~~ whether they would be of much use.

The label to Mammillaria arachnidea was not misplaced, it belongs to the sp. with yellow recurved spines.

M. Scheerii is not known to me.

In regard to the specific names given in the field by myself, they have of course to be left out, wherever priority on the one or impropriety on the other side should command it. If You mean to honor any of our cooperators in Cactusmatters with Godfathership

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14391B

I shall heartily consent to it. Only if You should find it practicable, You will have to let open one to be named by myself, that is I wish to do what Yourself would not be able to perform.

~~It~~ With the above I close for this time, thus I am

Sincerely Yours,,
Arthur Schott

Maj: W. H. Emory is actual Major in one of the cavallery regiments.

A Schotts Notes 1856

Echino-cacti:

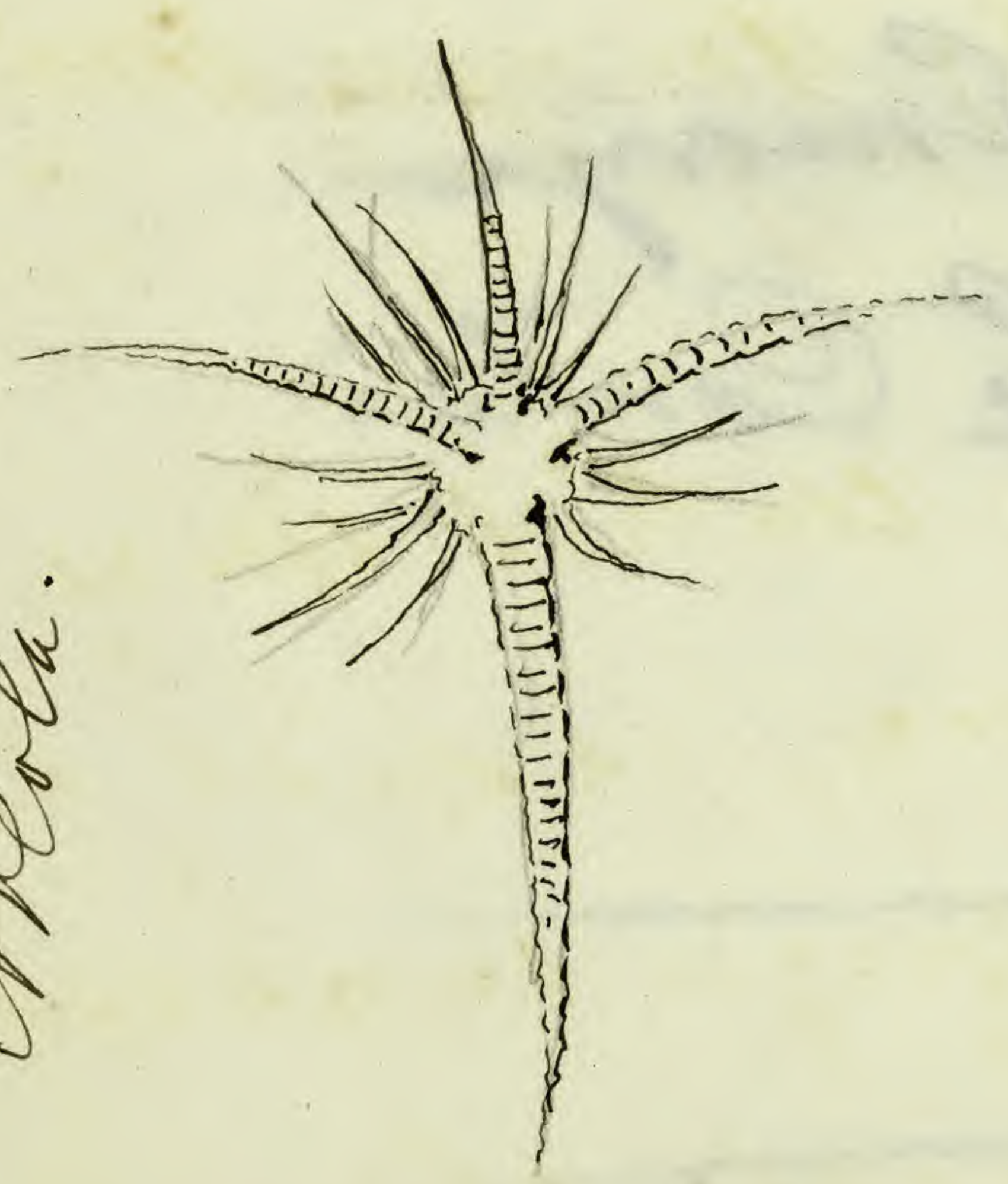
Bisnagas Viznagas (Mexican.)
Niggerheads, Turksheads (Texans); Mohren oder Türkenköpfe)

No 1. E. stella maris.

2. E. cottonisferus — polycephalus
3. E. caput Medusae. mihi — Emoryi
4. E. clavis Herculis. — Le Contei
5. E. nogalensis. ?
6. E. Cati rostatus
7. E. Wislizeni

Echinocacti.

No 1. Echinocactus Stella maris. mihi.
E. viridescens. Nutt.



~~[illegible]~~. 13 – 21 ribbed. 4 central spines annulated somewhat ~~[illegible]~~ recurved This plant is usually single growing, sometimes are 3 – 4 associated together.

San Diego Seabeach.

Vertical sections of the bacca & persistent flower

V.

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14397

No 2. E. cottoniferus. mihi.

~~E. Engelmanni~~ = E. polycephalus E&B

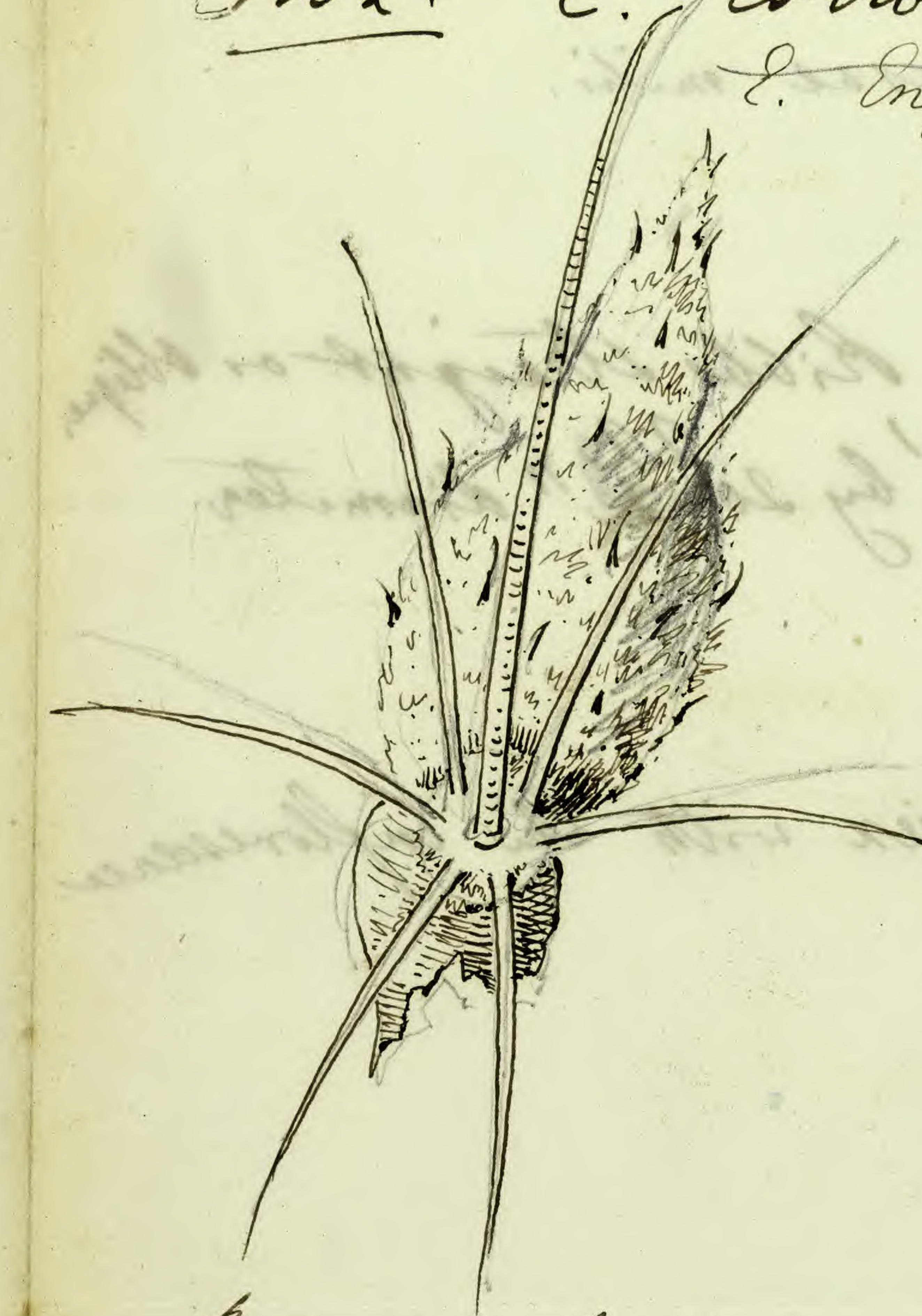
cespitose; heads 10–15" long by 5–8" diameter

~~costa~~ ribbs 10 – 15; Younger specimen showing but 10.

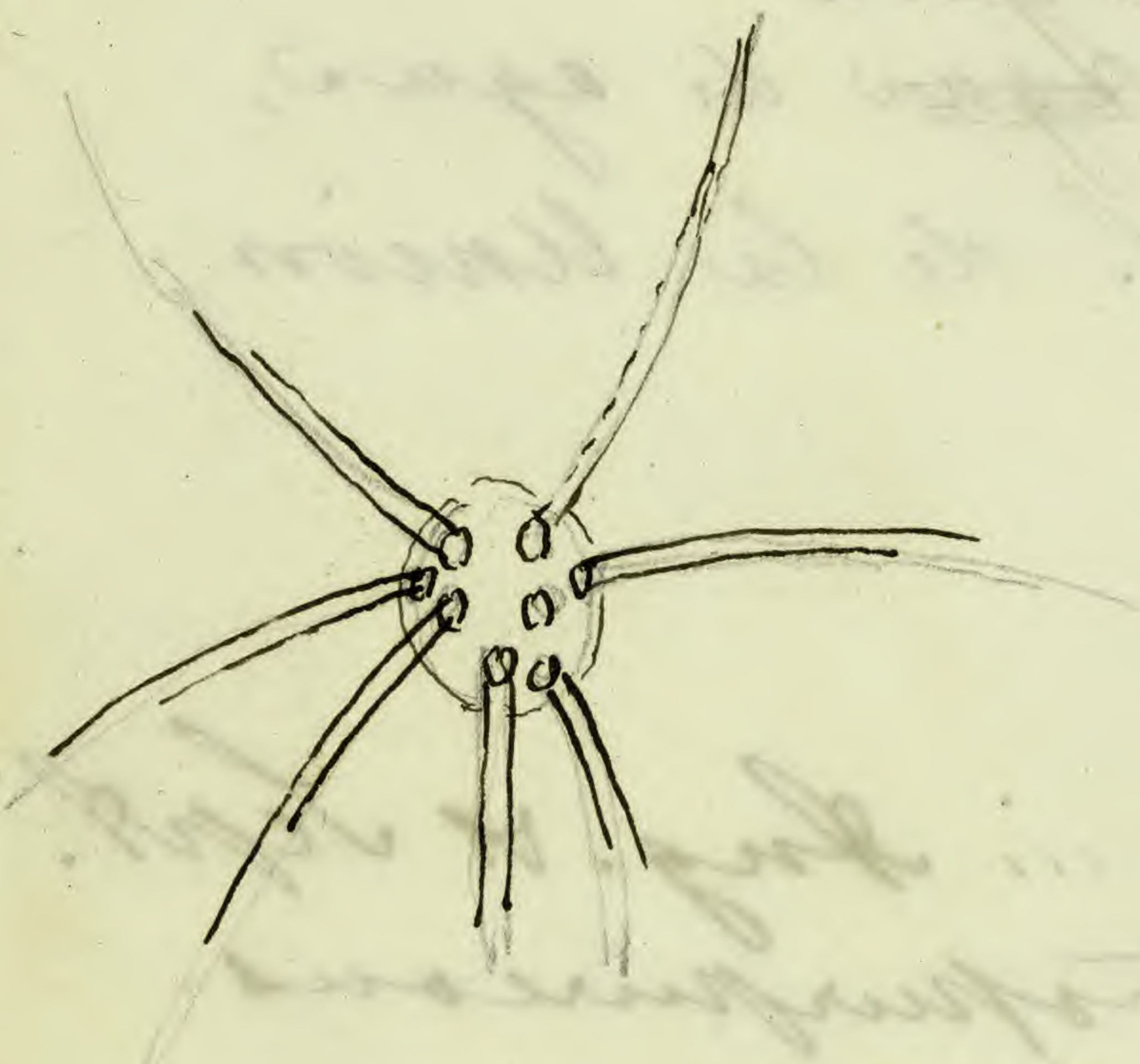
Areola round wooly; central spine longest 2" and more, radial but 1" hard but brittle; spines annulate rubescent; carpels wooly elongate-ovate: Flowers persistent. Inflorescence irregularly arranged on the appex.

Diluvial banks of the Gila & Colorado.

Sometimes in bunches of 5–7 heads



Bacca and Areola of E. cottoniferus.

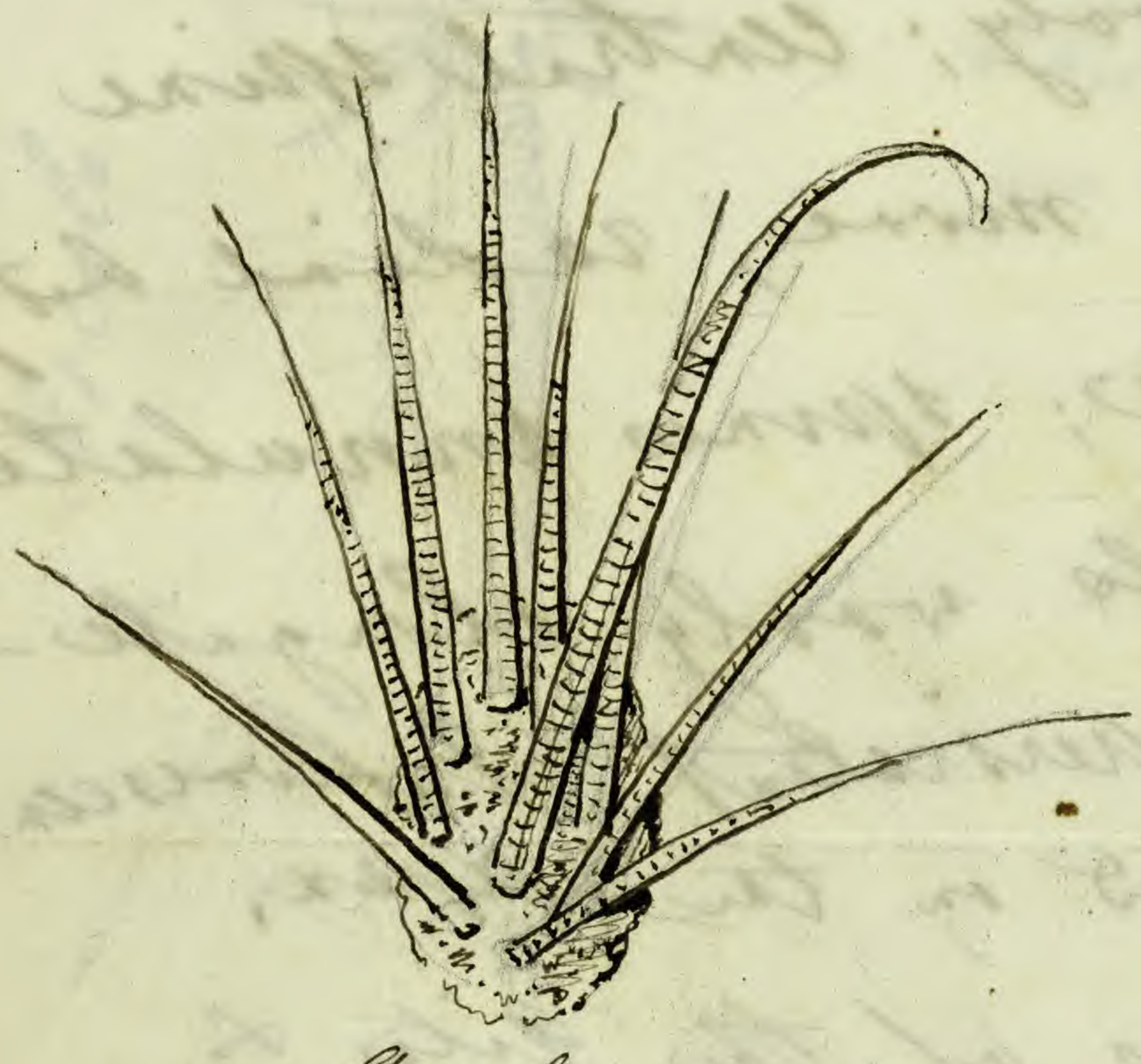


v.

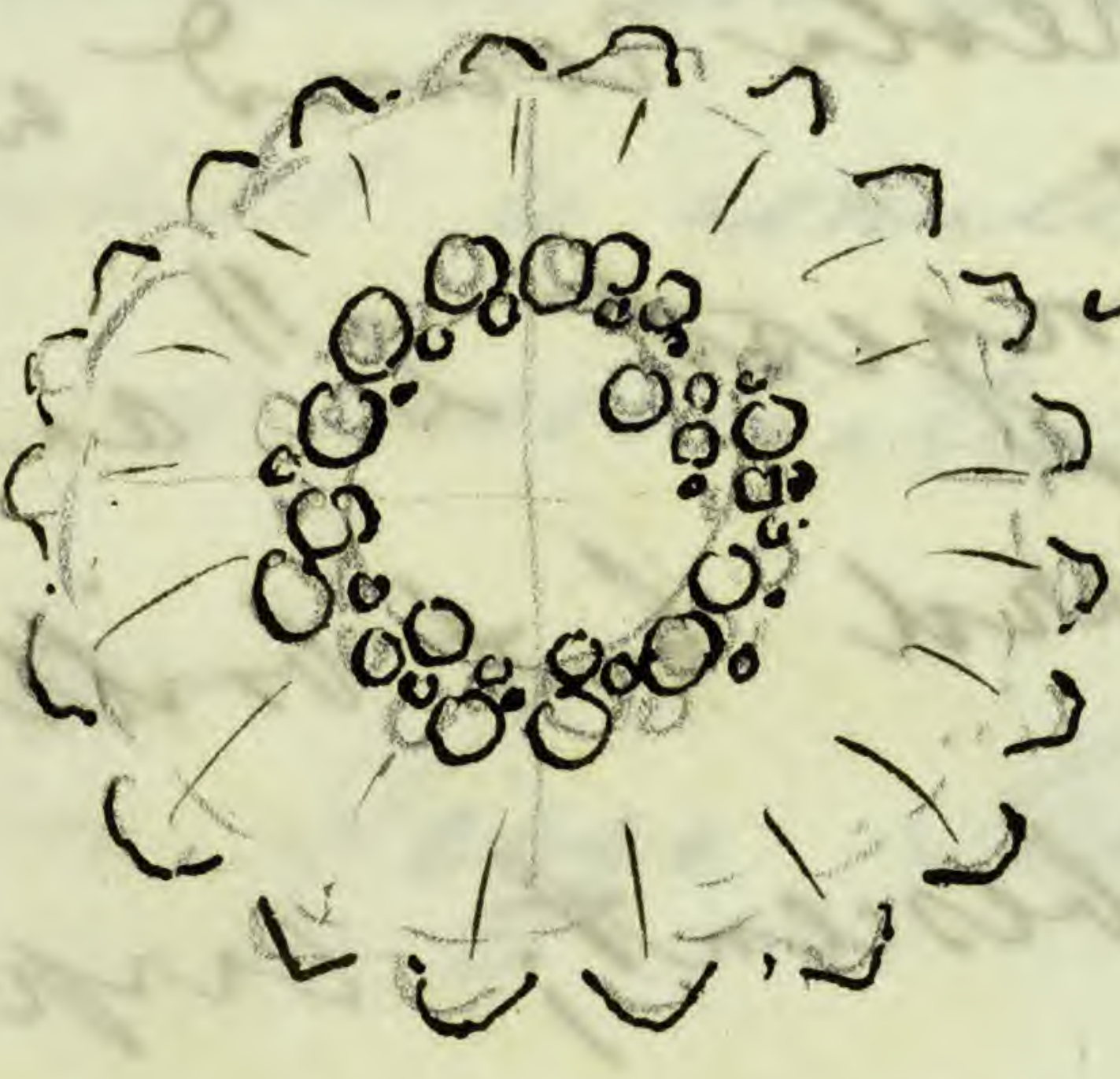
Emoryi

No 3. Echinocactus Caput Medusae. mihi.
E. Emoryi. Engelm.

Gigantic; 19 – 20 ribbed. Ribbs straight or oblique,
greyish green. Largest plant 2,5' by 20 – ~~2~~22" diameter

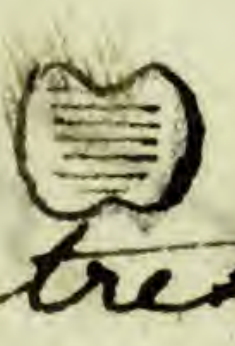


Areola.



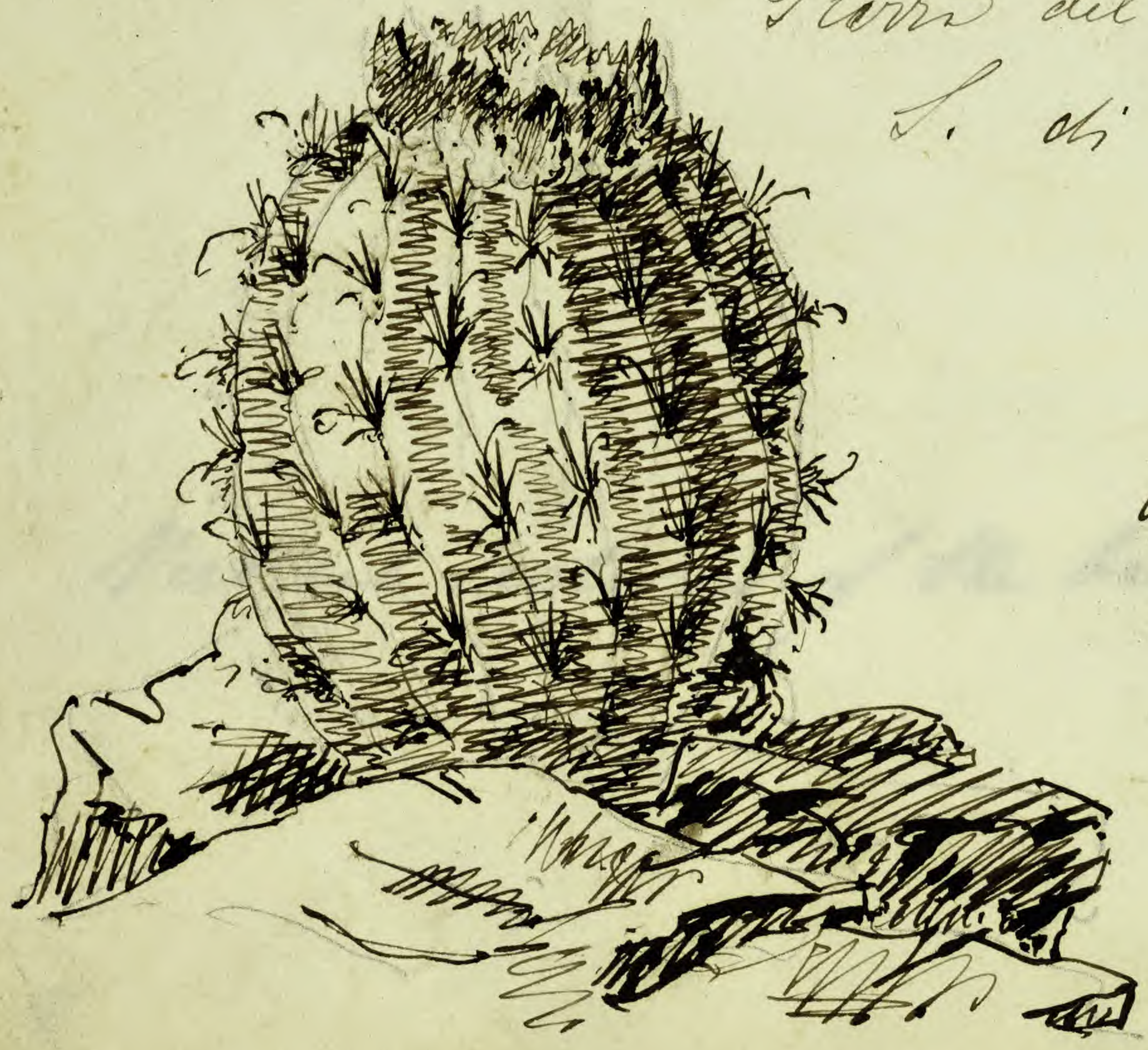
Appex with the infloresecence.

Transverse section of the



centrespine.

~~[illegible] [illegible]~~, ~~Agua~~ Pozito di agua,
Sierra del pajárito, S. de la Union
S. di Sonoyta.



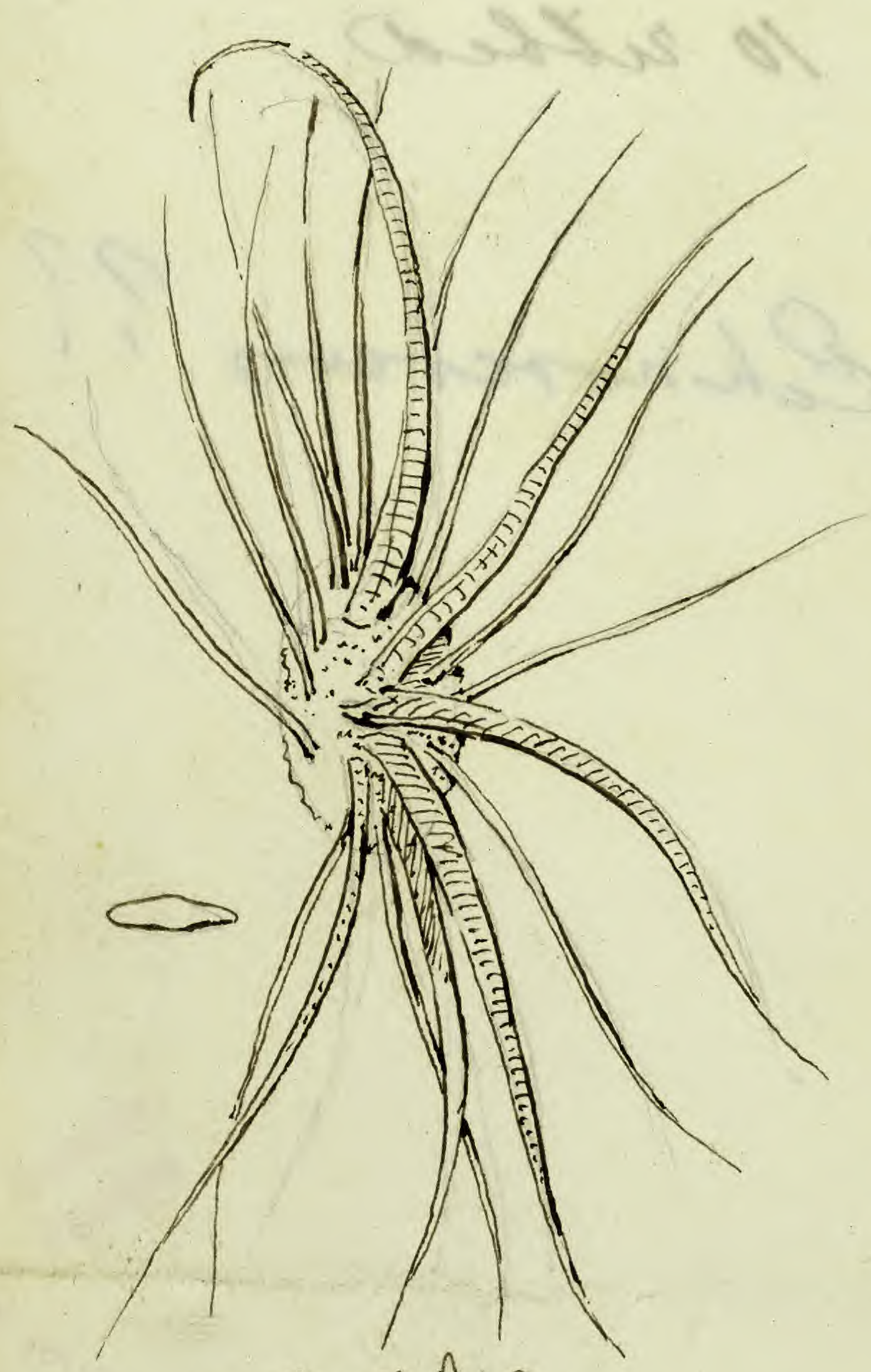
Flowers in Aug. & Sept.
Petals atropurpureous.

V.

Cactaceae. Echinocacti. C 2

E. Lecontei

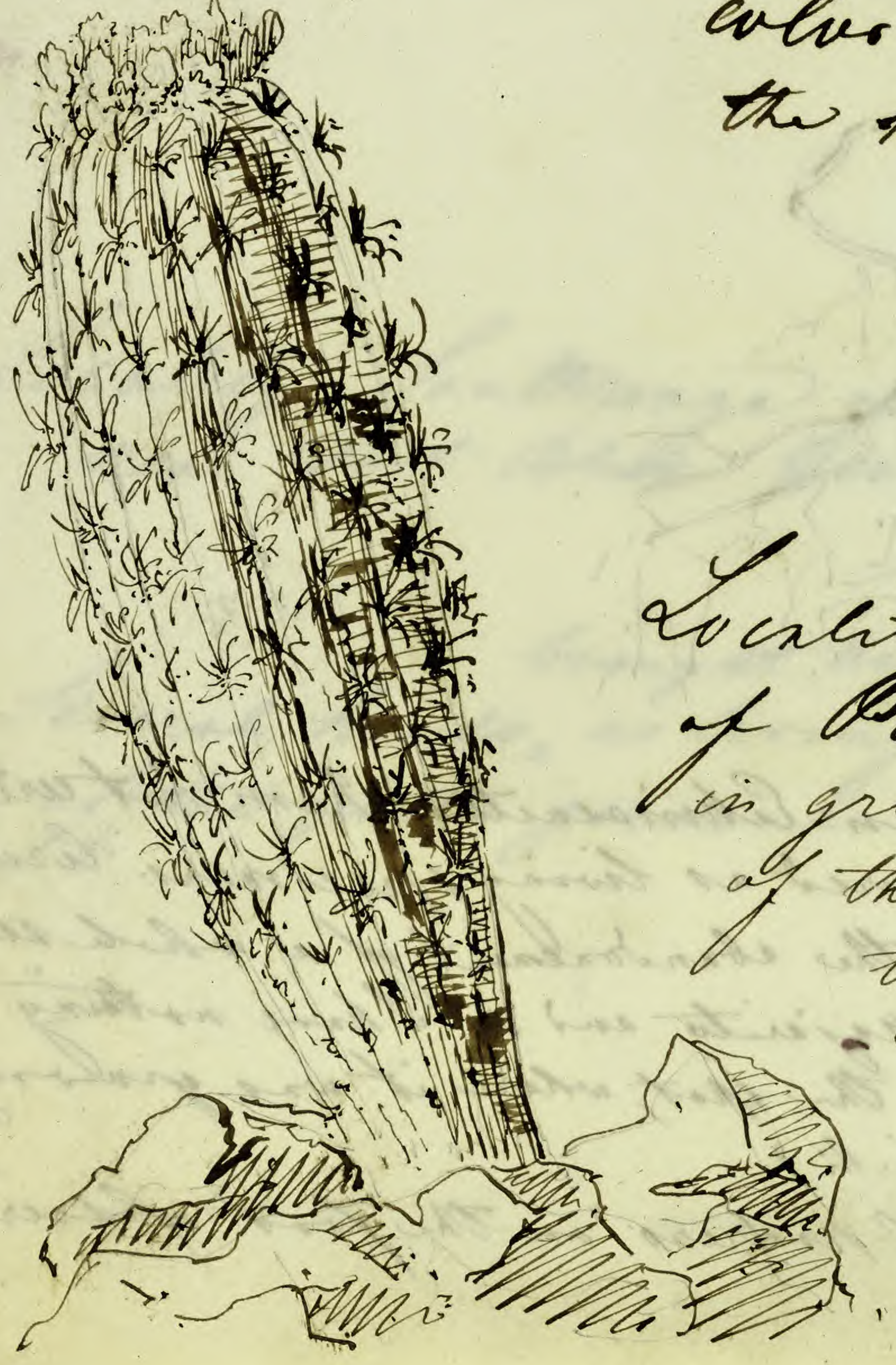
No 4. Echinocactus clavis Herculis. mihi.



3' high by 10–12'' diameter. Inflorescence somewhat resembling that of E. caput Medusae but the flowers are arranged more ~~placed less dense~~ scattered.

Areolas ovate or round, 2'' distant. Ribbs crenate;

Blooming Aug. & Sept. like E. caput Medusae. Flowers somewhat bellshaped, petals lemon-colour with a brownish hue along the nerves.



Locality. Gila and western parts of Pimeria alta. I found them in greatest abundance on the slopes of the Sierrita de Sonoyita, where they made a show by being associated together to 5 and 10 individuals and appearing like young Cereus giganteus.

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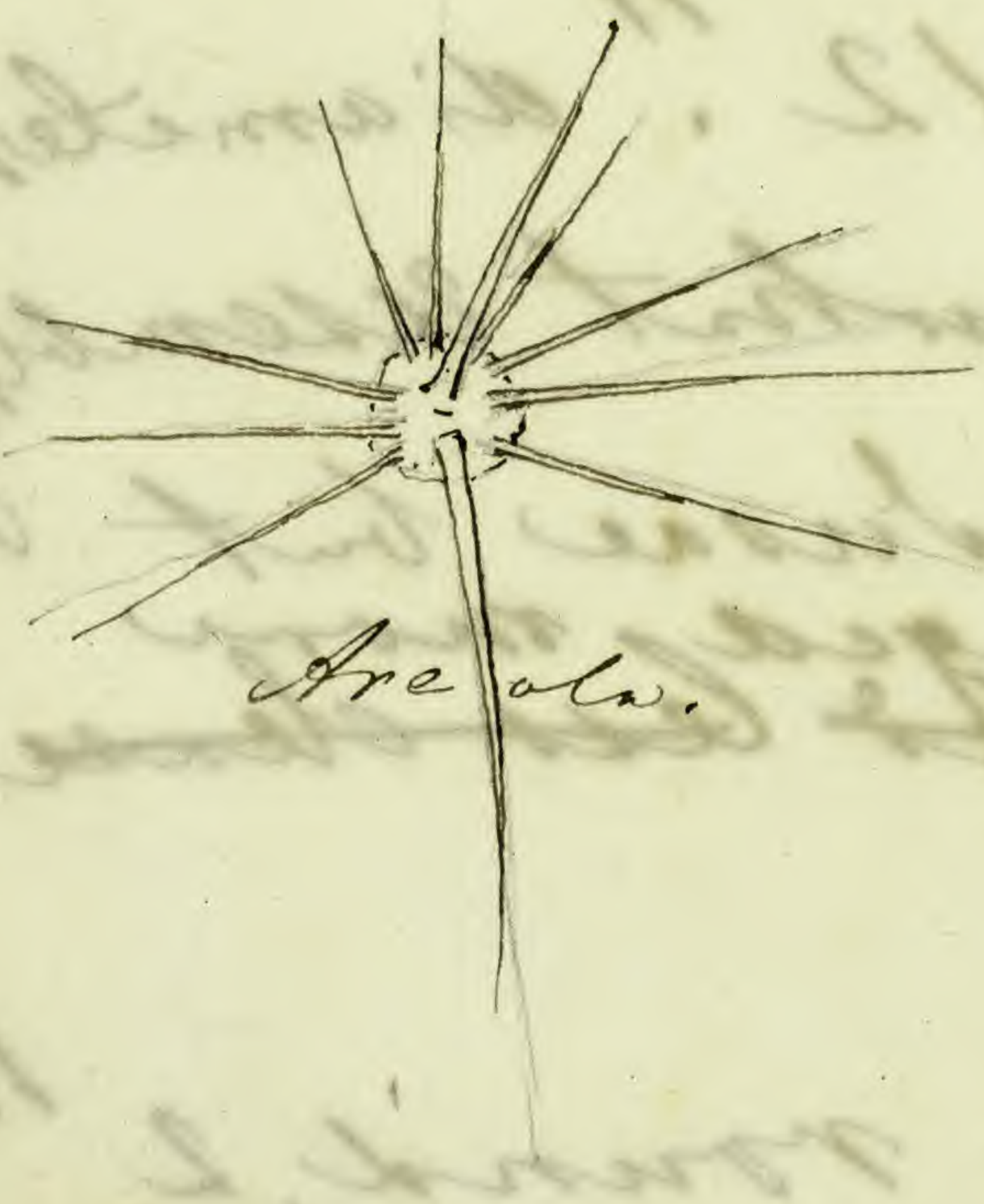
Cactaceae. Echinocacti:

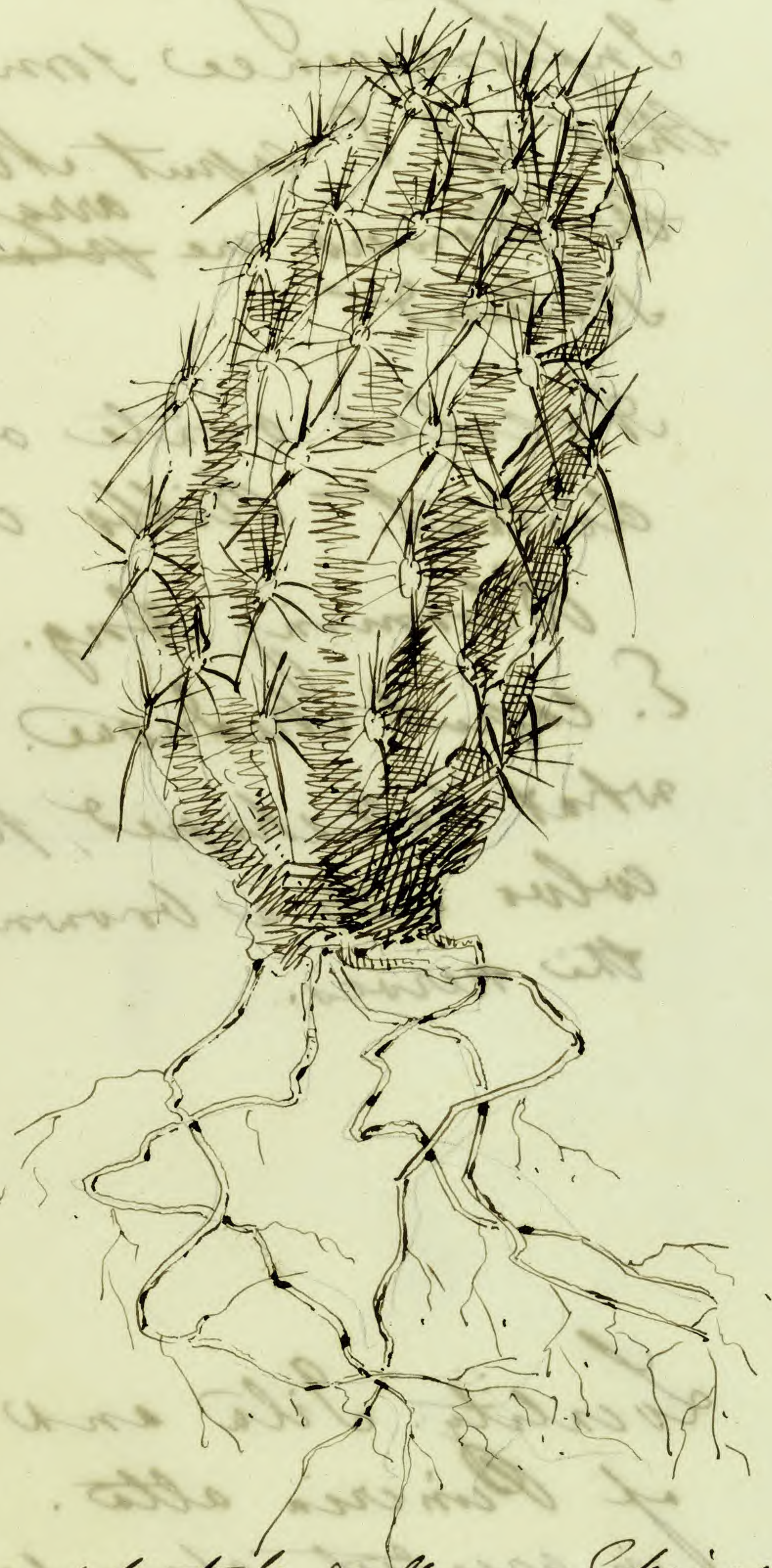
No 5. Echinocactus nogalensis (mihi).

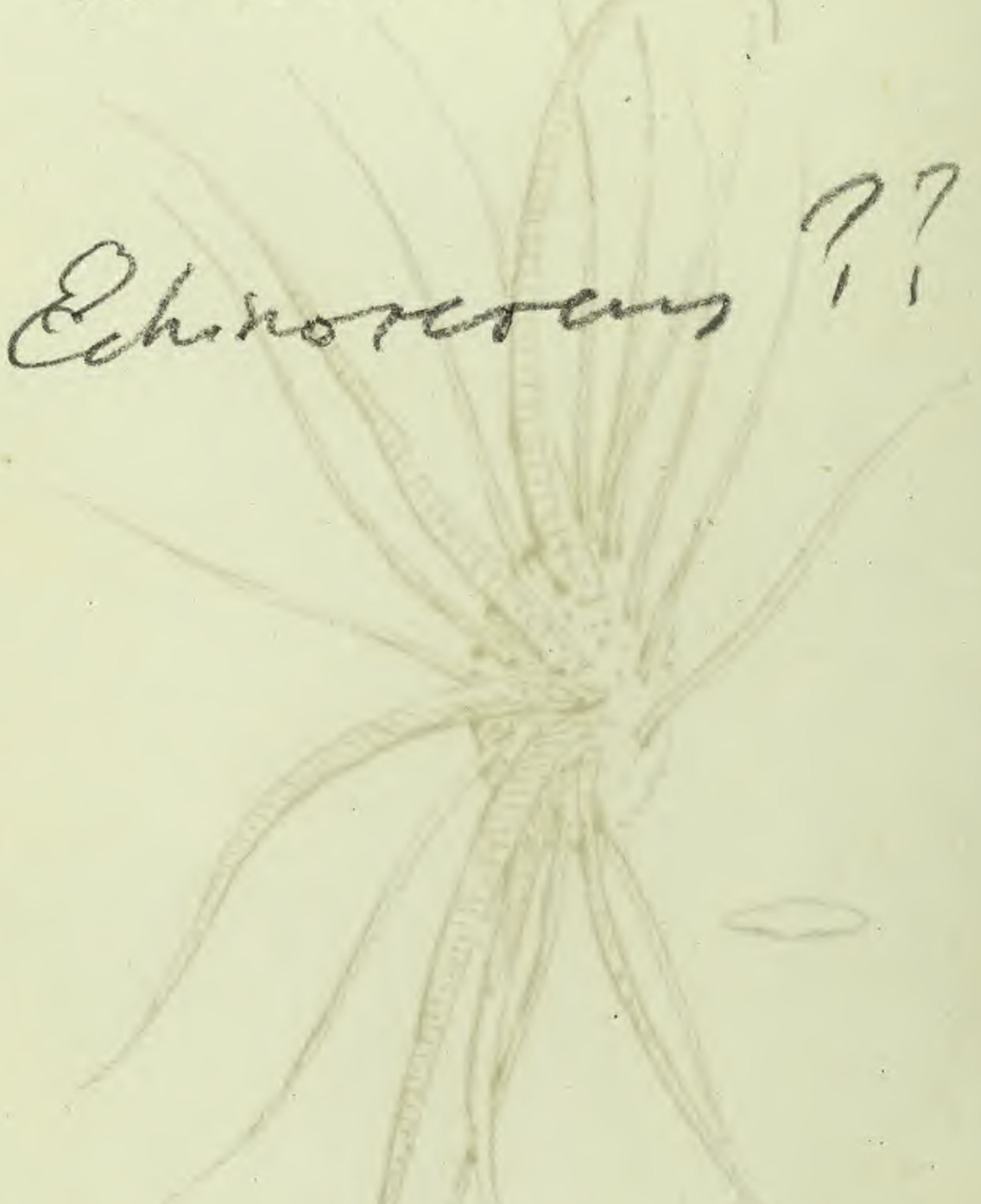
(scetch natural size)

10 ribbed.



10 ribbed





Echinocereus ??

MISSOURI BOTANICAL GEORGE ENGELMANN

Whether the above plant be really an Echinocactus I am not certain. Only two individuals of it were procured as living specimens. Circumstances however ~~free~~ caused afterwards the abandonement of a whole series of living cactuses in the sierra del pajarito and so I have nothing to offer but a copy of the scetch which I made on the spot, where it was growing among Mammillaria strobiliformis (mihi)

The locality of its discovery was „el potrero" on the foot of sierra del Pajarito near $\frac{111°}{32.20°}$ long. lat.

14393

No 6. Echinocactus laticostatus.

Locality. Southrange of the sierra de los organos near Fort Bliss. West Texas.

Several heads, brought here as living specimens, they are now in care of the public gardener.

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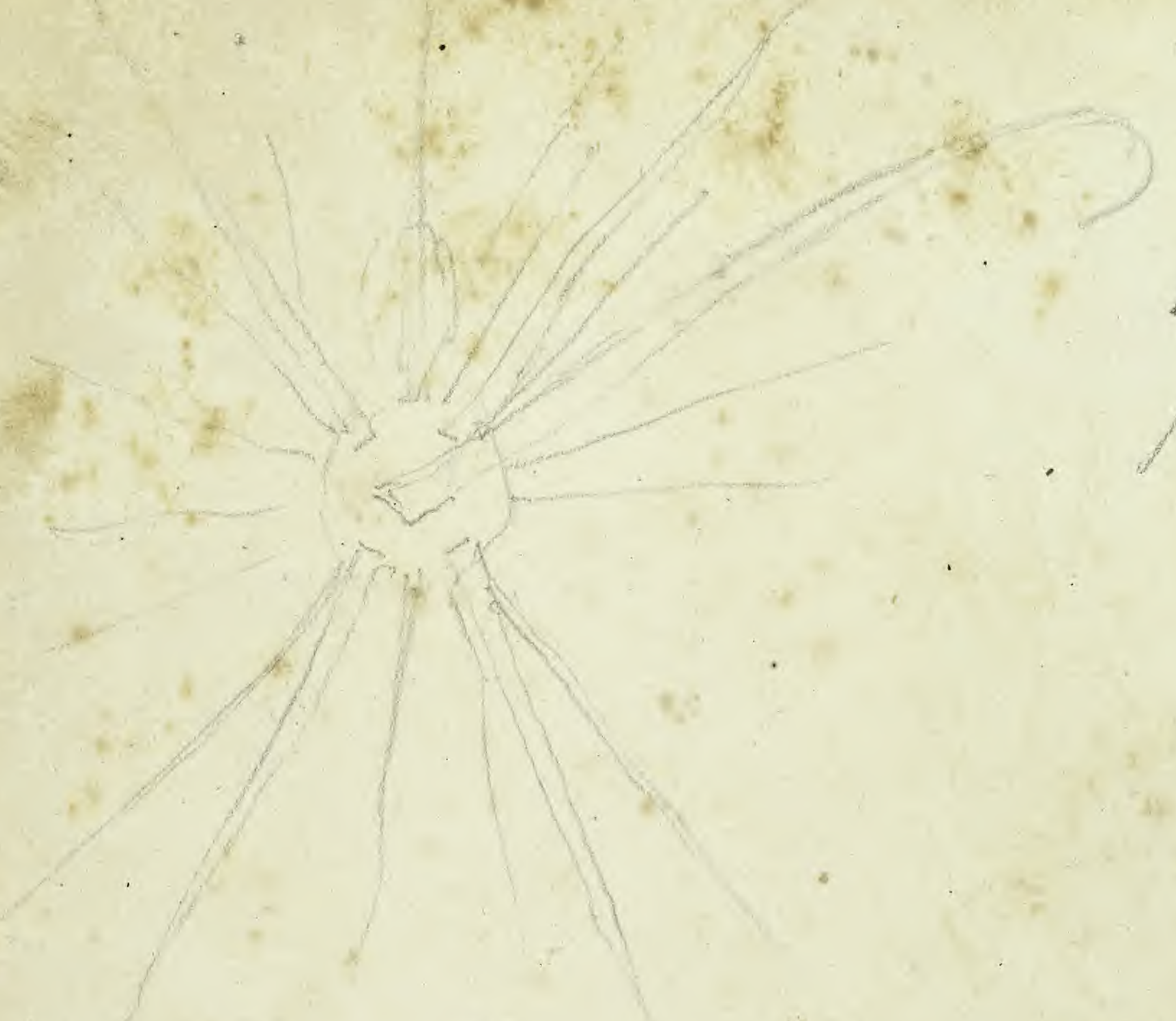
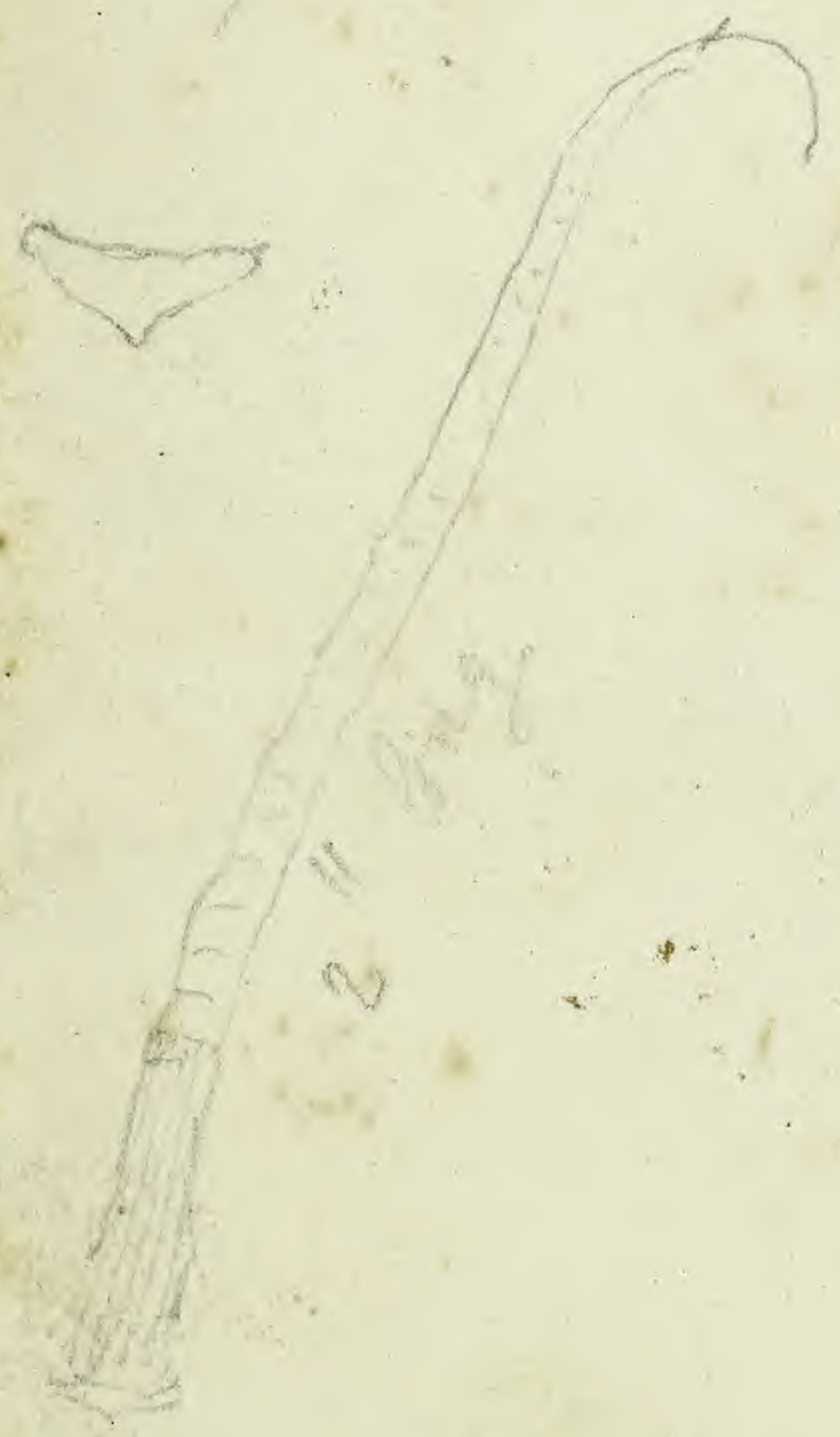
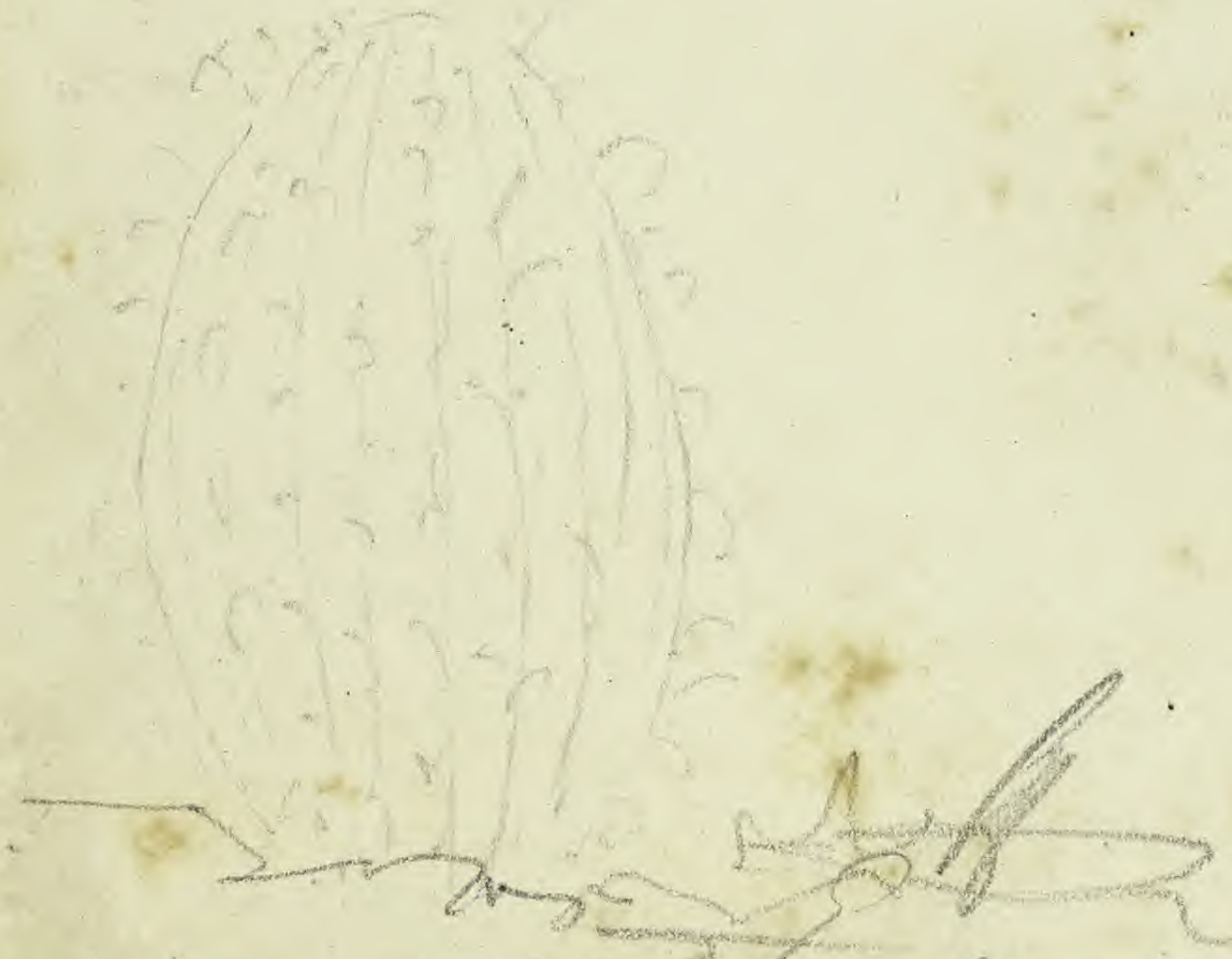
7) Echinocactus Witzlizenii. Engelm.

19 ribs,
1' high.
1' diameter





Clavis Herculis



E ~~cnac~~ clavis Herculis?
Echinocactus caput Gorgonae?
near Campo Miraflor (Gila) & western part of the Boundary line.

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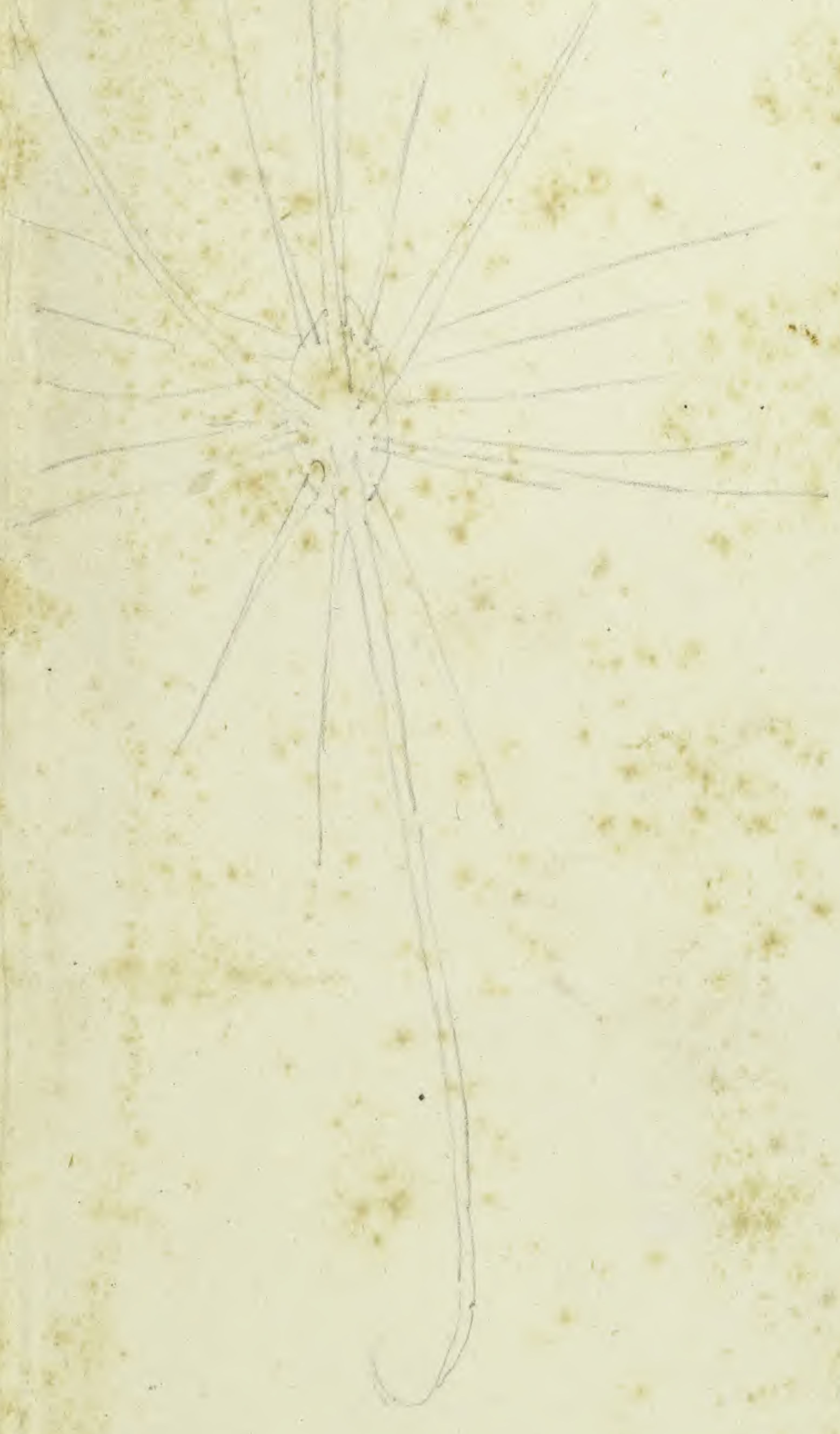
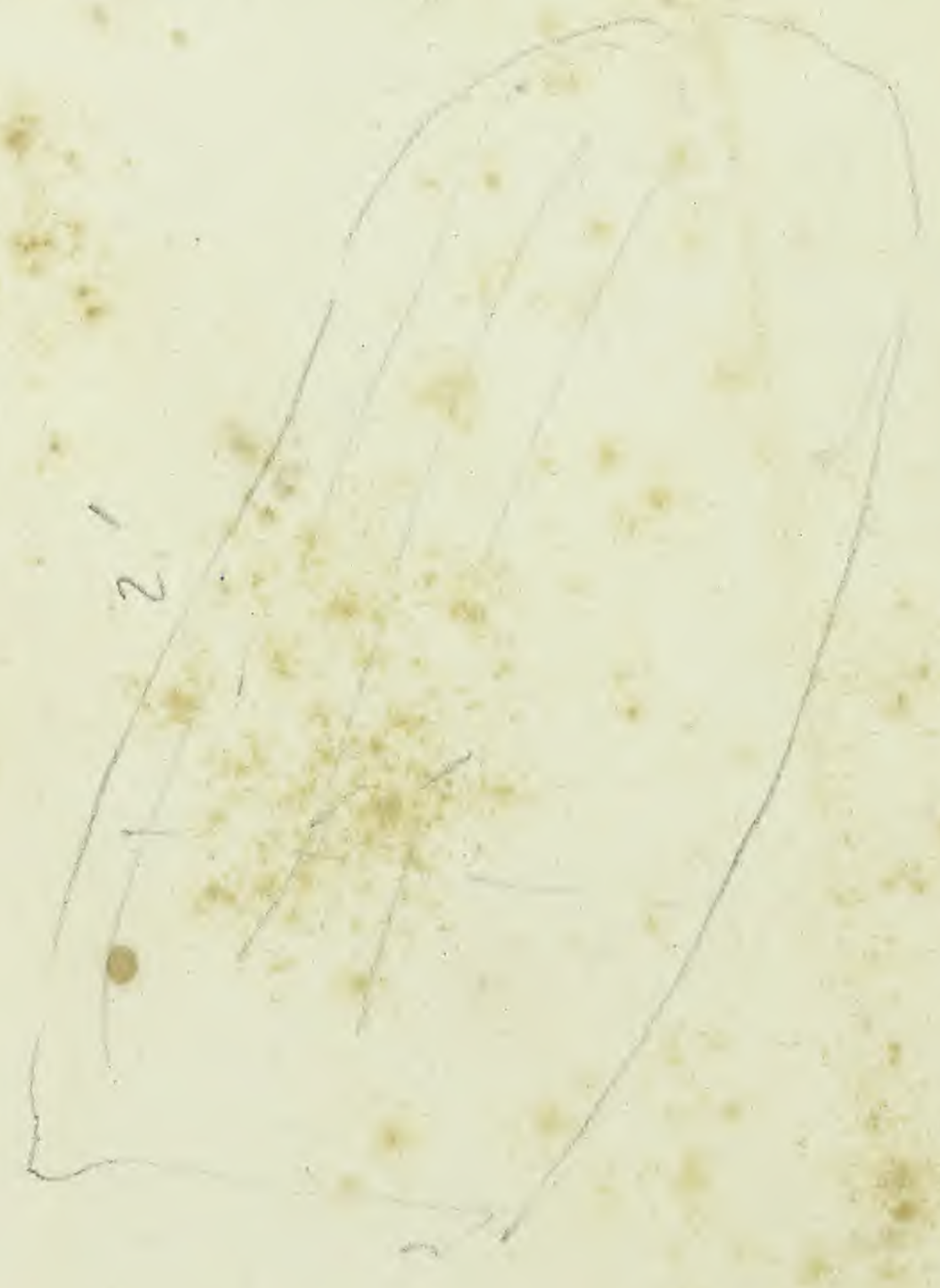
Echinocactus ~~caput gorgonis~~ Wibbe

clavis Herculis





14395

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MISSOURI
BOTANICAL
GARDEN

A. Schott's Remarks

Nopal, the characteristic plant of the Flora of Mexico and therefor placed as an emblem in the arms of this empire. The genus Opuntia ~~to~~ which the Napal plant (Prickly pear) is belonging to, is in the regions along the Rio Bravo variously represented by numerous specees. Most of them are ranging from the Seacoast up ~~too~~ through the whole country. Of the various species, which have come to the knowledge of the travellers and collectors several may be considered only as subspecies or mere varieties. Like the Mesquitewood or Yucca among the ex- and endogenous plants of the country takes the Nopal-plant the most prominent station among all the Cacti of Texas. Its ~~[illegible]~~ existence on the soil of this country is of the highest value and undeniable importance, though it is usually looked at by travellers, ~~fr~~ especially by American and other foreigners as & „a course upon the land", created only to sting and ~~th~~ to occupy valuable space. What however the speculative Anglo american, Dutch or German has not yet probarly recognized, the contemplative Mexican, half Spaniard half Indian, became fully aware of a long time ago. The usefulness of the Nopal is well appreciated in Mexico ~~thus~~ and also in Western Texas.

In the first place the ~~[illegible]~~ organism of the plant answers perfectly the purposes of nature. ~~It~~ Occupying immense tracts of ~~[illegible]~~ dry arid land, where hardly any other plant is able to prosper, the Nopalplant possesses a strong power to absorb atmospheric moisture in regions which in this respect

Remarks on Texian plants by Arthur Schott

seem to be forsaken.

The Nopal produces on the waterless sterile surface of the desolate regions of Western Texas precious food thus well for the animals of the wilderness as also for those, which aid and accompany man in his domestic endeavorings of civilization. It is for the latter reason, that the Mexican considered in former times the Western parts of Texas as the most valuable grazing country and in fact before its prosperity was so thoroughly annihilated by the sports of the red man hunderd thousands of heads of cattle, horses, mules, sheep and goats ~~were~~ have been raised and sold annually from those parts of Texas. A proof of this fact is still alive in those ~~flags~~ swarming ~~of~~ flocks of innumerable horses, mules and cattle, roving even at ~~to~~ this moment in a perfectly wild state through those regions already mentioned.

The young unarmed shoots of the Nopales offer, as it is already stated, valuable food to ~~those~~ all animals living on vegetables at a time, where the whole store of other vegetable food of the past season is consumed and grass not yet out again; ~~this~~ this is during the months of January and February and also during the season, when all ~~the~~ other plants in the country are dead asleep under the influence of the scourging midsummer sun. For the domestic animals the Nopalfood can be prepared at every season, as the Mexican do by parching off the prickles by means of an open fire.

The people of Texas and Mexico use pieces of Nopal split

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3

in two for covering and protecting wounds and bruises of animals and even men. I myself had often opportunity to a~~cknowledge~~ observe good success of such an application.

An other peculiarity of such split pieces of Nopales is the effect of clearing muddy water in time of some few minutes ~~muddy water~~. After the prickles being parched off such a piece is fastened on the end of a small stick and thus used ~~th~~ to stir ~~the~~ up the water to be cleared. The earthy matter by this proceeding forms a sort of as flocky sediment, which after a short time falls rapidly to the bottom.

The fruits of the Nopal even of the common are eatable, though they seem to be not entirely indifferent. I saw several times persons eating 5–6 pieces, without experiencing any inconvenience, whilst I saw at an other time a young Mexican getting a pretty severe chill * after having eaten ~~the half~~ only one half.

Of Nopales even among those resembling most each other in appearance and habitus several species seem to occur in those regions along the Rio Bravo. It was in consequence of adverse circumstances, that I was deprived of the opportunity of studying the various members of this genus more close in their home. I think however there is some slight difference in the outer appearance of this plant ranging down on the whole line along the Rio Bravo, which I have travelled over. Thus I met with the Cochenilla not before the summer 1853 during which time I was engaged to survey from the town of ~~[illegible]~~ Laredo down to the vicinity of Camargo. Whether it was an uncommon rainy season favoring the growth of the precious Cochenilla, ~~to~~ or is this tract of land really the home of this insect, I can not ascertain. Higher up as Laredo I do not remember of having seen the Cochenilla. The appearance of it on the Nopalplant is much like mill-dew. The Mexican gather it frequently here for their own domestic use. After smashing it to a perfect dow a flat cake is formed of, which, exposed to the rays of a subtropic sun becomes soon perfectly dry and hard. In this shape it can be preserved for a long time. According to my knowledge the Cochenilla of this part of the country is not yet brought to any ~~[illegible]~~ commercial account. ~~[illegible]~~. An other species though not growing wild ~~is~~ sometimes, is met with in the country on the Rio Bravos. The Nopal de Castil, as it is called, seems to have been brought by the Mexican from the South. Thus it is to be found here sometimes under the protection of Ranchos and ~~their~~ inhabitants. I never had opportunity to see blossoms or fruits of this plant, the branches of which are more elliptic round and full, but not so large as of the common one. They are also more whitish or pale green. The fruits, as I was told, are more sweet and entirely harmless, the ~~growth~~ plant generally more gorgeously growing. Thus I saw a specimen in the Mexican town of Santa Rose twenty five feet high and occupying a space of more than 144 squarefeet. The young sprouts of an Opuntia usually dressed in different style and eaten in Mexico probably origine from this species.

Opuntia frutiosa

Tunita, diminutive form of Tuna is the fruit of Opuntia frutiosa, which is very common in every locality, where ~~th~~ other Opuntia's have their home. Most of them are ranging through the whole of the Lowlands, even down to the shore of the saltwaters. The fruits being of a sourish taste are ~~eata~~ eatable. In answer to remove those hairlike prickels peculiar to them the Mexican place a portion of the tuna's in a vessel with some water, brushing and cleaning them by means of a broom.

Like the nopales the bearers of the tunita, which might be called " nopalito's have also only some few hours ~~at~~ during the ~~middle~~ noon of the day, when they open their blossoms.

As the whole family of these plants is armed by nature it is frequently used for ~~building~~ planting living fences. The easy manner by which ~~they~~ even the smallest cuts are taking root favor the application for such purposes very much.

Arthur Schott Remarks on Texian plants.

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KEW

Coyonoste, is the Mexican name for the Opuntia arborescens. This plant is growing only in the upper country. I met it ~~fo~~ first on the El Paso road between Leon-springs and the first striking of the usually dry river „Limpia." It is on this line, where the ~~[illegible]~~ strata of secondary limestone and even of Cretaceous rocks appear as having been protruded by the tops of volcanic rocks. On these, which I may call igneous rock Islands, I saw the Coyonoste first, almost ~~unvariably~~ regularly appearing and disappearing with them, until remaining constantly in sight ~~is~~ after reaching the Sierra Diablo, which is towering up right close on the before mentioned Limpiariver

I never could learn the meaning of the word Coyonoste, but I was informed that the inhabitants of the country, Mexican and Indian, use the sap of this plant as an addition ~~to~~ for brightening up the ~~be~~ dye of the Cochenilla.

Opuntia arborescens

Remarks on Texian plants by Arthur Schott

Bisnaga or Visnaga under this Mexican name a small Mamillaria was shown to me by a gentleman, who was living for a ~~[illegible]~~ long time in Mexico. As he had added the remark, that this plant is common in use to prepare preserves of, I suspect that there must be some mistake about the identity of the plant. I rather believe that the name Bisnaga is applied to those Cactuses, which are commonly called by the Texians Turks- or Nigger h~~ats~~eads and which bear the generic name Echinocactus. May be that only E. ~~Wis~~ Wislizenii ~~[illegible]~~ E. Texensis and E. visnaga are meant with, of these plants the fleshy inside is eatable, as I often tried it ~~often~~ myself. The taste resembles much like that of fine turnipes.

~~The~~ Mexican ~~[illegible]~~ ~~con~~ confectioners frequently cover pieces of this eatable with a sweet coat of candy, which prooves ~~[illegible]~~ ~~to~~ ~~be~~ indeed to be a fine ~~[illegible]~~ sweetmeat.

Remarks on Texian plants by Arthur Schott

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No 8 of draw

8

No 8

Organos: With this name the Mexican on the lower Rio Bravo design a Cactus of the family Cereus. Thus far as my knowledge goes, two or three different species are understood by this name. ~~Throughout the cretaceous~~ Throughout the cretaceous formation there is one growing cespitose, in dense clusters. Its octogonal branches are somewhat falcate with an obtuse appex. Thus the whole plant has the appearance of a bundle of upright standing cucumbers. For this reason the Texian of the english tongue call it „Cucumberplant", whilst the Mexican call it „Organos" (organpipes). Its eatable fruits offer to travellers one of the finest refreshments during the months of Mai & June. Shape and taste of the [illegible] ~~Pit~~ Pitalla's, as these fruits are called are much like large gooseberries and even the insidepart, with its black seeds imbedded in a whitish jelly resembles much to the latter. Higher up in the Walley of the Rio Bravo, where a more solid limestone is taking the place of the softer cretaceous Greensand an other Pitallaplant occurs among the former, much like the former though larger in all its dimensions. The fruit of this is also eatable but more sour and has therefor the name „Pitalla acre", whilst the plant itself is also called Organos.

C. variabilis

Farther below where the cretaceous rocks give room to diluvial and alluvial deposites an other Organosplant is making its appearance, comprehending two species, one tetrangular ~~the~~ an other triangular. The growth of both

Remarks on Texian plants by Arthur Schott

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is not cespitose. As I was informed by the inhabitants of those regions the blossoms of these organos are yellowish white; About their ~~[illegible]~~ fruits I could not learn anything. Whilst ~~the~~ both the former prefer open dry ridges, the latter like to stand more under the protection of other plants in more fertile soil.

In other parts of the country the name „Los organos" seem to be applied even on quite different plants, if they have only a somewhat like appearance.

Thus for instance I heared mention the Fouquiera splendens under the name „Organillos."

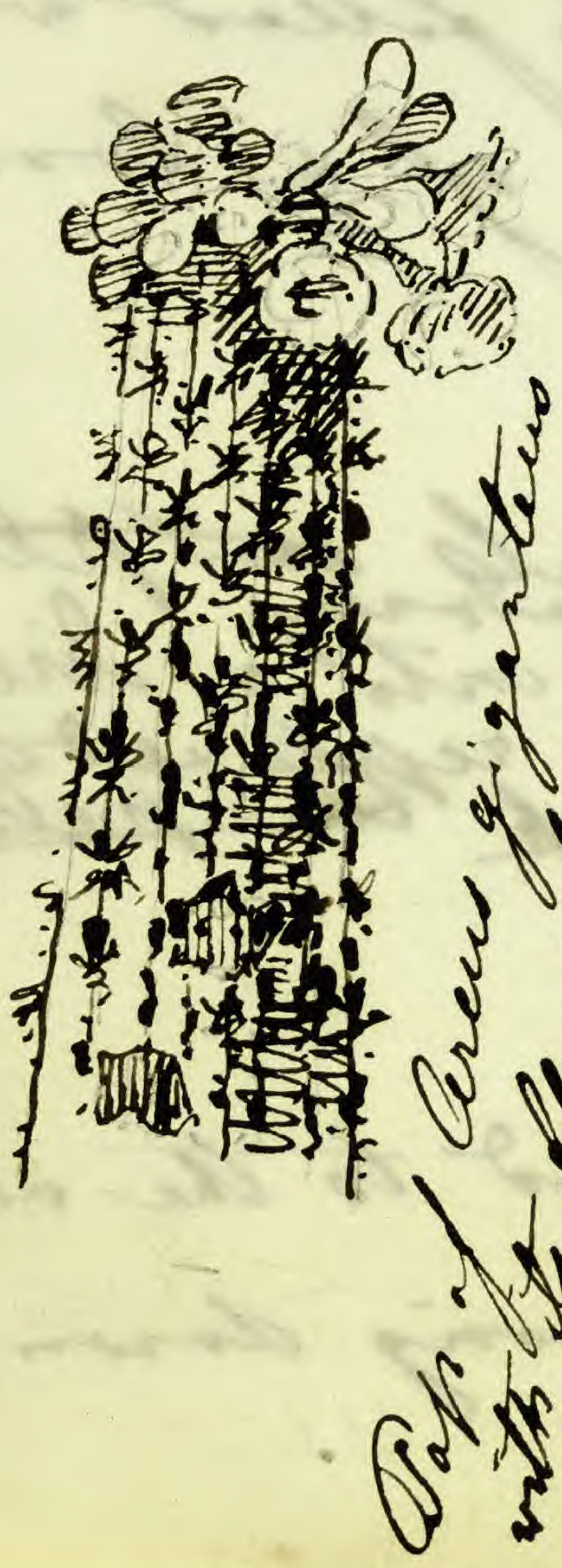
Cereus.

No 1. Cereus giganteus. (Engelm.) Saguaro (of the Sonorians)

Except scetches exhibiting habitus and deviations of its growth generally known nothing has been collected towards scientific description.

In answer to Your questions:
I never could learn anything as how old they may grow ~~and~~ the irregularity of the seasons and the capricious hygrometrical conditions of the air do, I believe, not allow ~~to~~ any conclusions as to their annual growth. In fact ~~for the~~ there exists no regular fiscal- or solar year for the vegetable kingdom in the western wastes of Chihuahua and Sonora and even Texas.

Every rain actually falling causes a new spring sometimes such occur during certain months quite frequently sometimes these countries suffer drought for 16– 18 months.



Part of Cereus giganteus with its flowerbundles.

Drawings to show the naturelike appearance of the plant in question together with sceleton and irregularitees I want more leisure for than I am now permitted to expend.

The present is all I possess on fieldnotes or scetches. A drawing of the fruit I would have to make from memory aided by material of dry specimens.

14401

I

No 2. Cereus Thurberi (Engelm)
Pitahaya of the Sonorians.

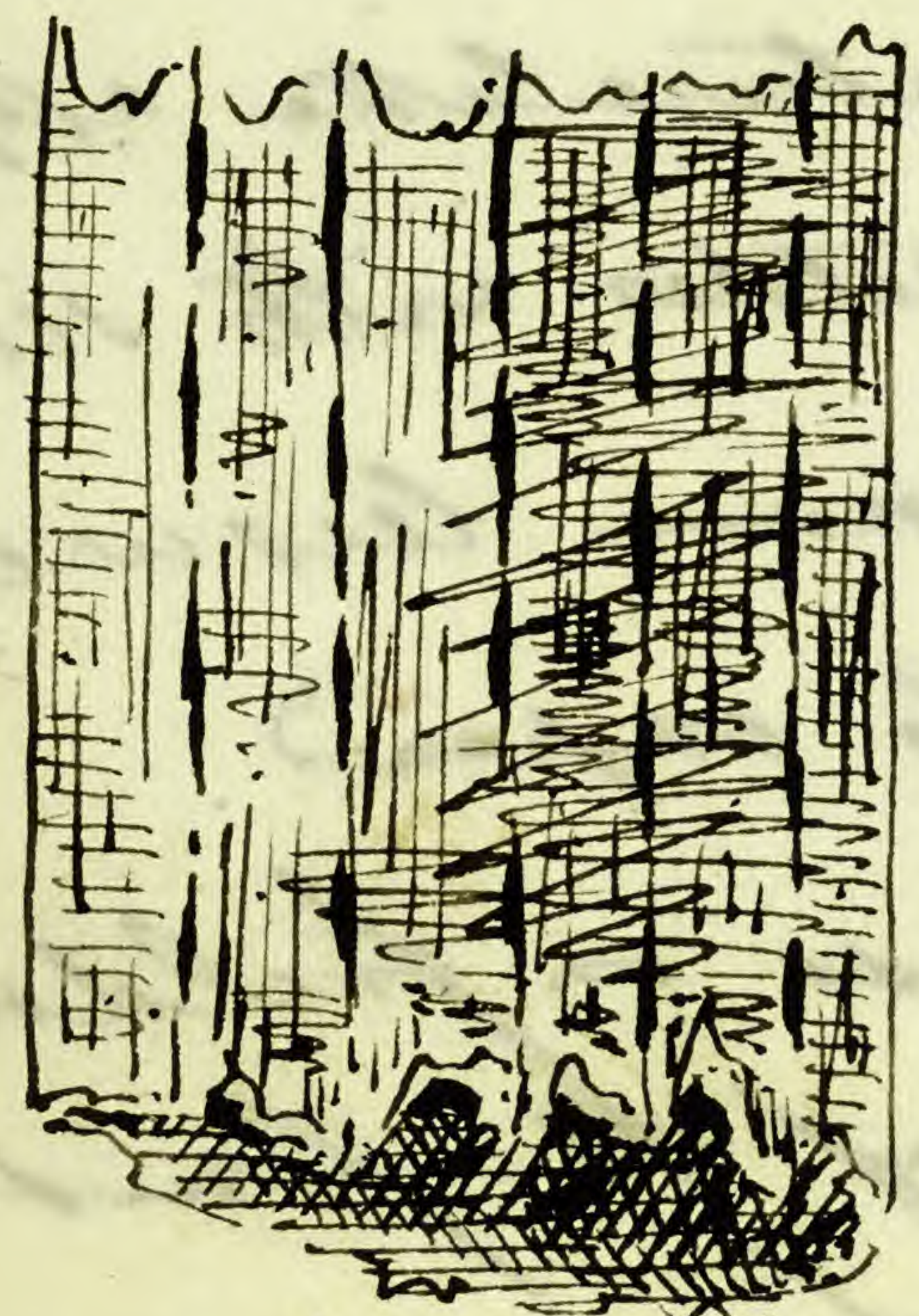
10–15' high. fruticose driving 10–15 yellowish-green adscendent stems from one root. Stems articulate, lower joints 2–3 upper 5–6 feet long. diameter 4–5." Ribbs 13–14 very little relief

Areolas distant 12–15.''' tomentose when young and bearing 7–9 or more ~~set~~ ~~bristle~~ slender setaceous atrofuscous short spines, the longest of which are 6–9''' long.

Bacca globose, olivecolored, size of a small ~~an oran~~ orange shell soft and like all the eatable fruits of the genus invested with numerous tomentose areolas and bristlelike thorns, which however give way easily in their state of maturity. Wool of the areola dirty white.

Flesh of the bacca bright carmesin richly imbedded with numberless black shiny seeds.

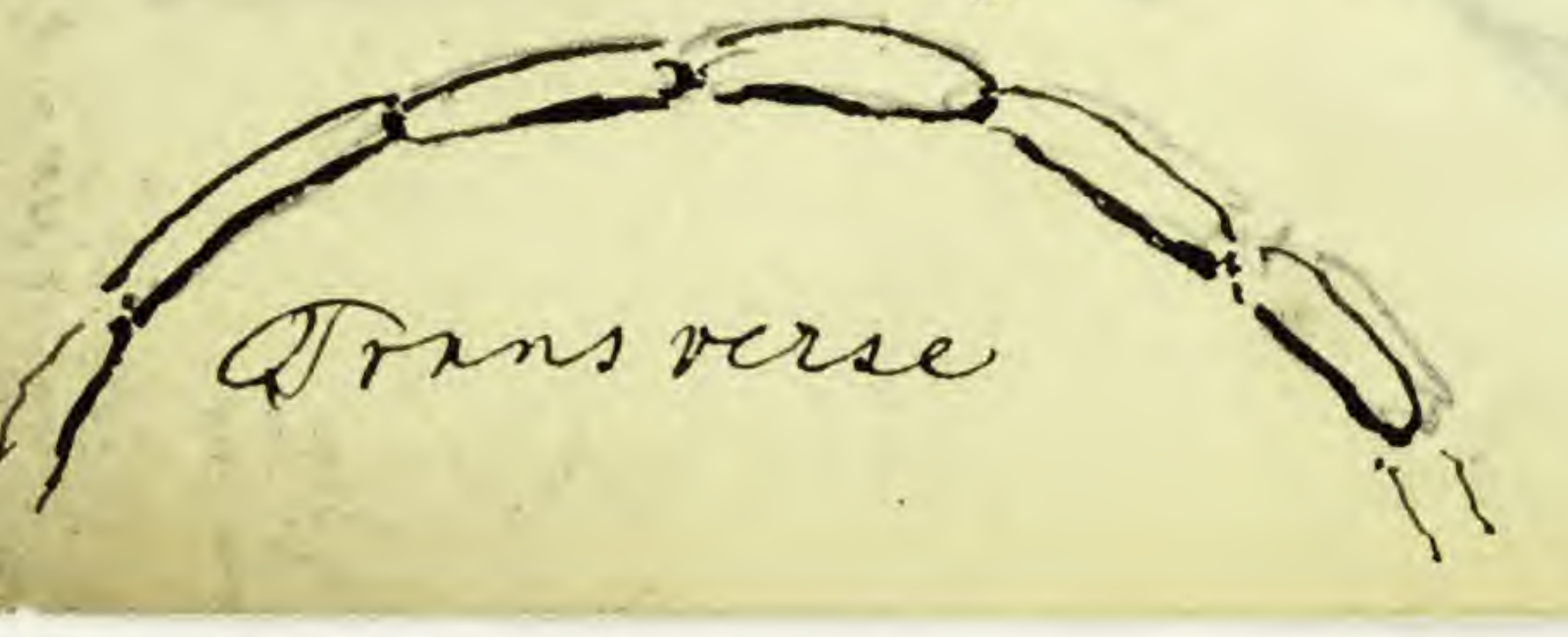
Skeleton forming ~~a~~ a week woody ring consisting of flattened pieces of fibrebundles. The tube of the dead skeleton loosely filled with a darkbrown dry powder, the remains of a loose cellular tissue.



piece of skeleton natural size.

Flowers ~~of the [illegible]~~ white; sepals ~~and petals~~ ~~[illegible]~~ olive colored turning gradually into a dirty white, where they ~~approach~~ are to be replaced by ~~the petals~~ the petals.

Inflorescence not confined to the vertex of the stems but often running down 1–1,5' below it.



Transverse

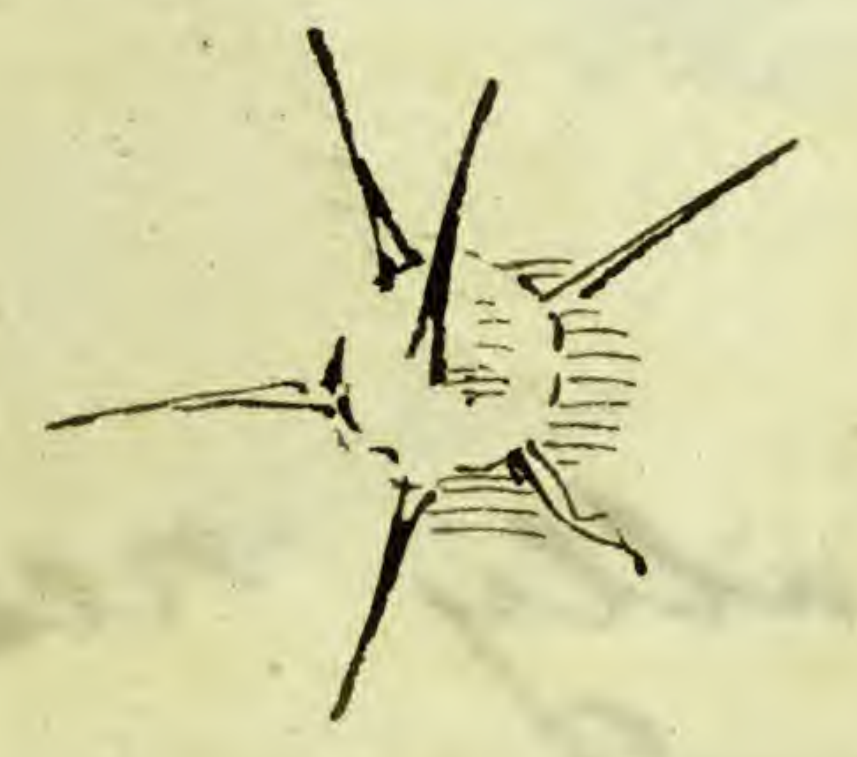
Pilocereus Schottii
I. Sina
s. pachytrichus
s. crassipilus

No 3. Cereus Sina. (mihi)
Sina, Sinita of the Sonorians.

Fruticose, 8 – ~~30~~ 10 & more stems ~~often~~ stems on one root; often several plants associate together occupying in dense clusters whole patches of land. 2 – 4 joints forming one branch 8–10' high; diameter 4–5". Older joints 4–6–7 gonal. Areolas tomentose when young bearing a dirty cream colored wool and ~~numerous~~ pendulous bundles of slender bristle-like greyish-white spines of 1,5–2" length. Older areolas naked and showing 4 – 6 radial & 1 central spines all ~~to~~ stout and not over 3–4 lines long. These spines however seem to lose themselves afterwards, leaving the stems of this plant entirely unarmed.

Influorescence like ~~tt~~ C. No 2. Flowers persistent somewhat hidden ~~under~~ on the longbearded areolas of the upper joints

Sepals and lower petals olivebrown, petals dirty flesh-color. Corolla tubular like that of C. giganteus. Bacca dry, 3–4''' diameter in length, bright scarlet, seeds bright black.



Locality. First seen on a small sierra near Sonoyta and from there South East towards Sta Magdalena and other places in that section of Sonora.
No 2 & 3 often occur together.

No 4. Cereus Hystrix (mihi
C. Engelmannii. &(Parryi)

Pitahayita or Pitahaya di suelo (Sonorians)

This plant seems to be known already.

14402

Locality. Common in the Gilavalley especially near the casa blanca above the Pimovillages.

pectinatus var rigidior

No 5. Cereus Senecciput. (mihi)

Popular names the same as with Mammillaria arachnidea. (mihi)

Cylindric (6–8" high 2" diameter) towards the appex a little attenuate ~~verte~~ apper applanate with an excavate centre. Ribbs 20–22. Areola linear-lanceolate naked. Spines radiate, strictly horizontal, horny, stout, yellowish-purpurescent transparent 14–16.

Inflorescence on the outer margin of the perigonium. Sepals to the lip invested with bundles of delicate white spines, petals bright pink or rosecolor and along the nervs of a darker hue.

Bacca globular often 0,5–1" diameter dark green afterwards in the state of maturity turning brownish. Pulp eatibly like that of several others of the genus. The flesh of the plant is also eaten by the inhabitants of the country. Root fibrous.

Locality. Pimeria alta in the ~~[illegible]~~ sierras. First seen in the valleys and arroyos of Sierra del pajarito.

The color of the spines tinted in red, yellowish and white often forms rings around the cylindric plants as if indicating by their different hue some~~what~~thing like annual growths ~~[illegible]~~

~~[illegible]~~. Rem. What I suppose to be Your C. cespitosus has an ovate circular areola with similar and alike arranged radiate spines like C. senecciput, but on the latter I never noticed a central spine. Habitus of the former is also different.

9

dasyacanthus E

6. Cereus crassus. (mihi)

Subcylindrical, ventricose ~~[illegible]~~ - cylindrical, ramose or subcespitose appex conic; 17–18 ribbs; areola ovate, naked, spines, ~~terete~~ acuminate, fasciculate covering the whole areola, lower longest ~~to~~ 3–4''' long, white and redish or pink anulated and typped, base ventricose ~~[illegible]~~ inflated;

Flowers or fruits not known to me.

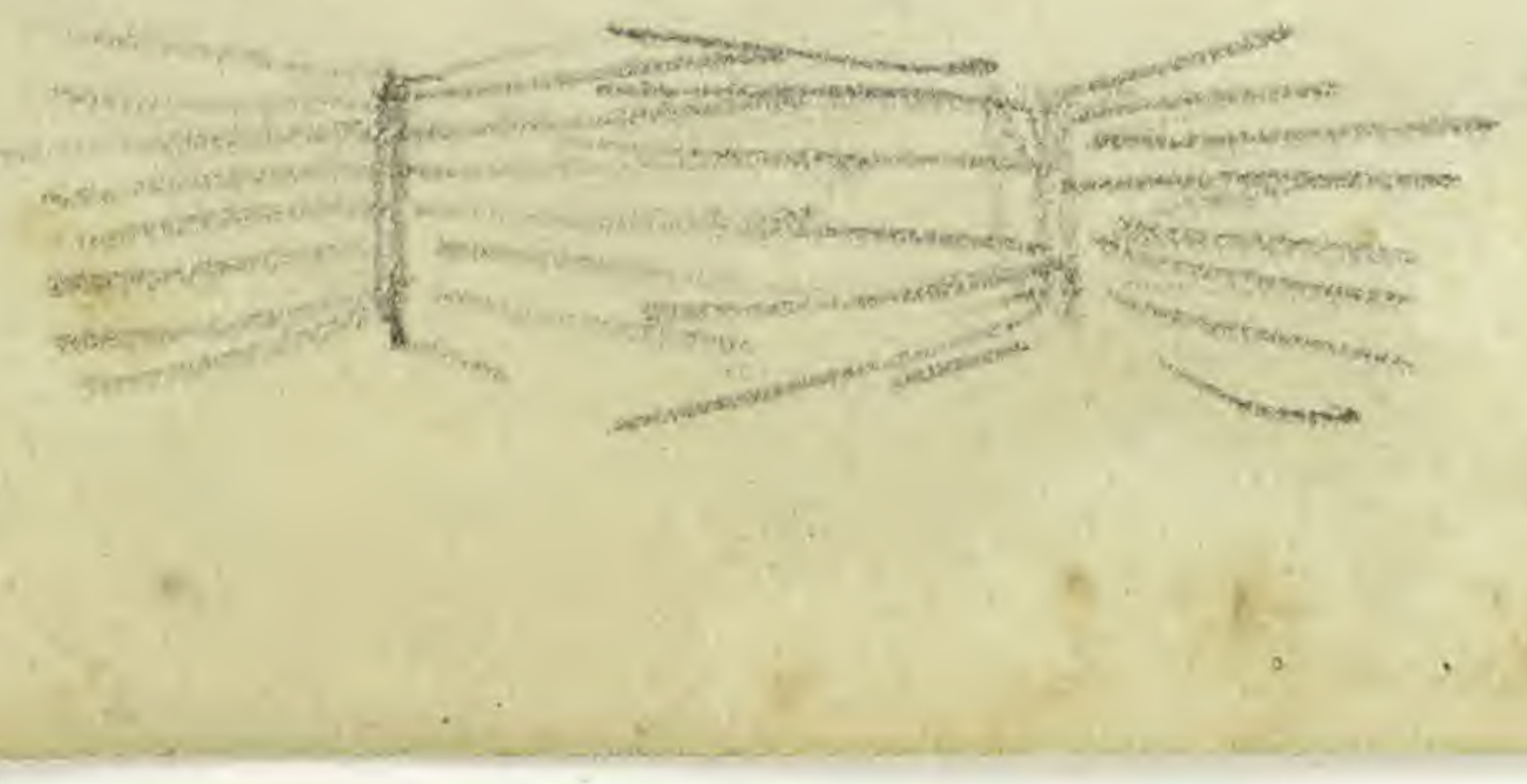
I send one living specimen of C. crassus (mihi)

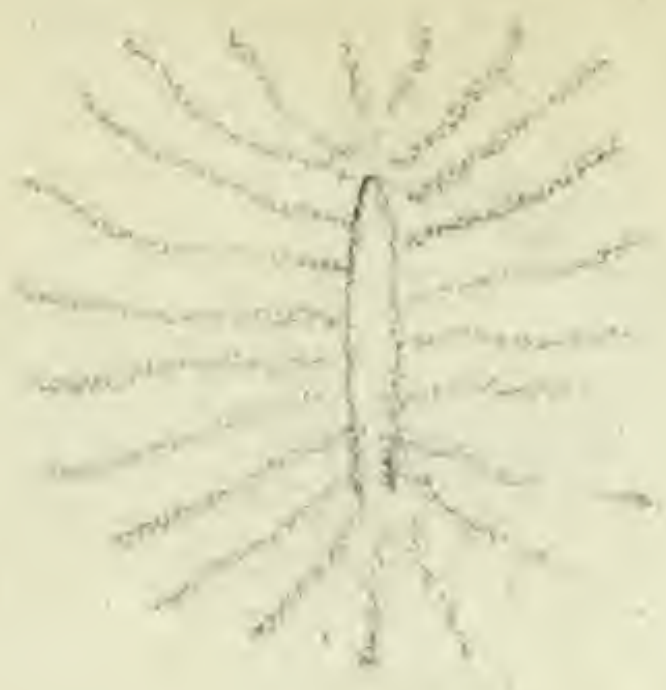
Locality South range of sierra de los organos near Fort Bliss. West-Texas and farther below in the valley of Rio Bravo.

Remark. No ~~7~~ 11. Cereus rigidispinus (mihi) is the same In habitu almost entirely alike to No 6. has for me no other marks of distinction between both except the number of spines, of which my C. rigidispinis ~~has~~ shows only half the number of those C. crassus has. Number of spines not being essential enough I shall not be surprized to see both those Cereuses ~~as~~ members of the same species

~~C~~ Cereus seneciput. Old mansheadlet greyheadlet. cabegito di viejo. cylindricais ~~vertice a~~ approxtt impressed 20-22 costa ~~lin~~ lineo-lanceolate ~~glabr~~ naked. areolas ~~clo~~ very close ~~sta~~ spines ~~all~~ but radiate, ~~ye~~ horny and ~~stout~~ & horny, yellowish-purpurescent ~~transflu~~ ~~trans~~ lucent. Plants ~~to~~ 6-8" high. Flowers large pink or bright rose color ~~com~~ ~~coming~~ appearing on the peripherya of the apex. ~~Sa~~ ~~Bacca glob~~ Sepals ~~invested~~ like the ~~globose 0,5-1" diameter~~ bacca invested with bundles of small white spines, whi and in the state of maturity de-adorus spines. Bacca globose often of 0,5-1" diameter. ~~Fruit~~ Bacca like the Pitahaya eatable; ~~also~~ The flesh of the plant is also eaten by the inhabitants of the country, Pimeria alta. Root fibrous

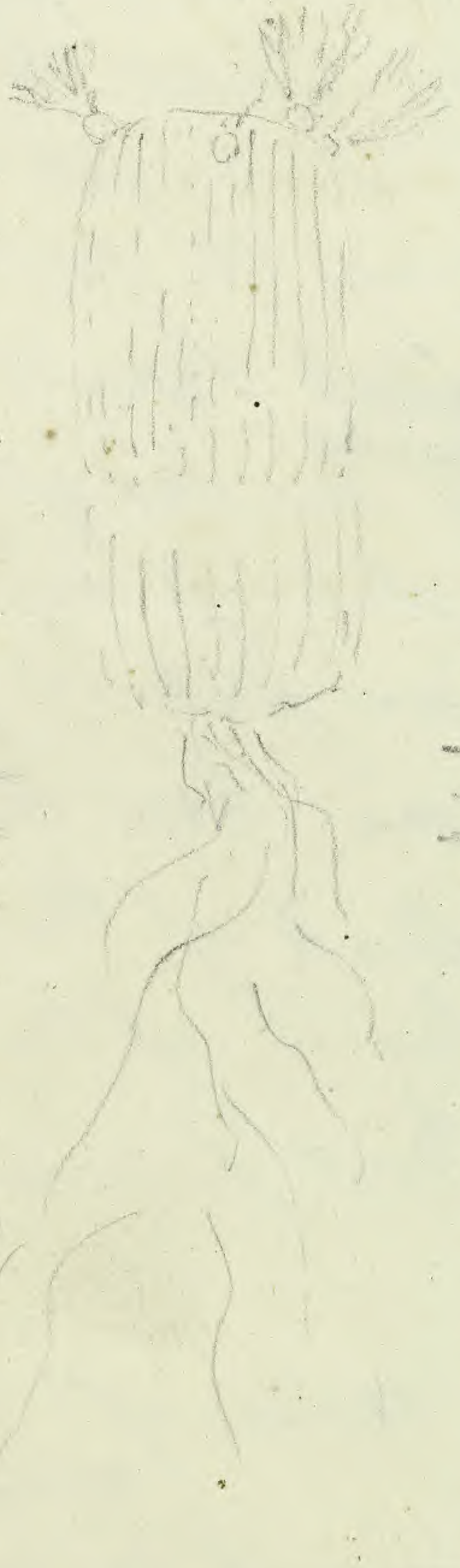
Spines resembling those of Cereus dipsaceus mihi: but straight and horizontally arranged round the areola, the points ~~[illegible]~~ overreaching each other.

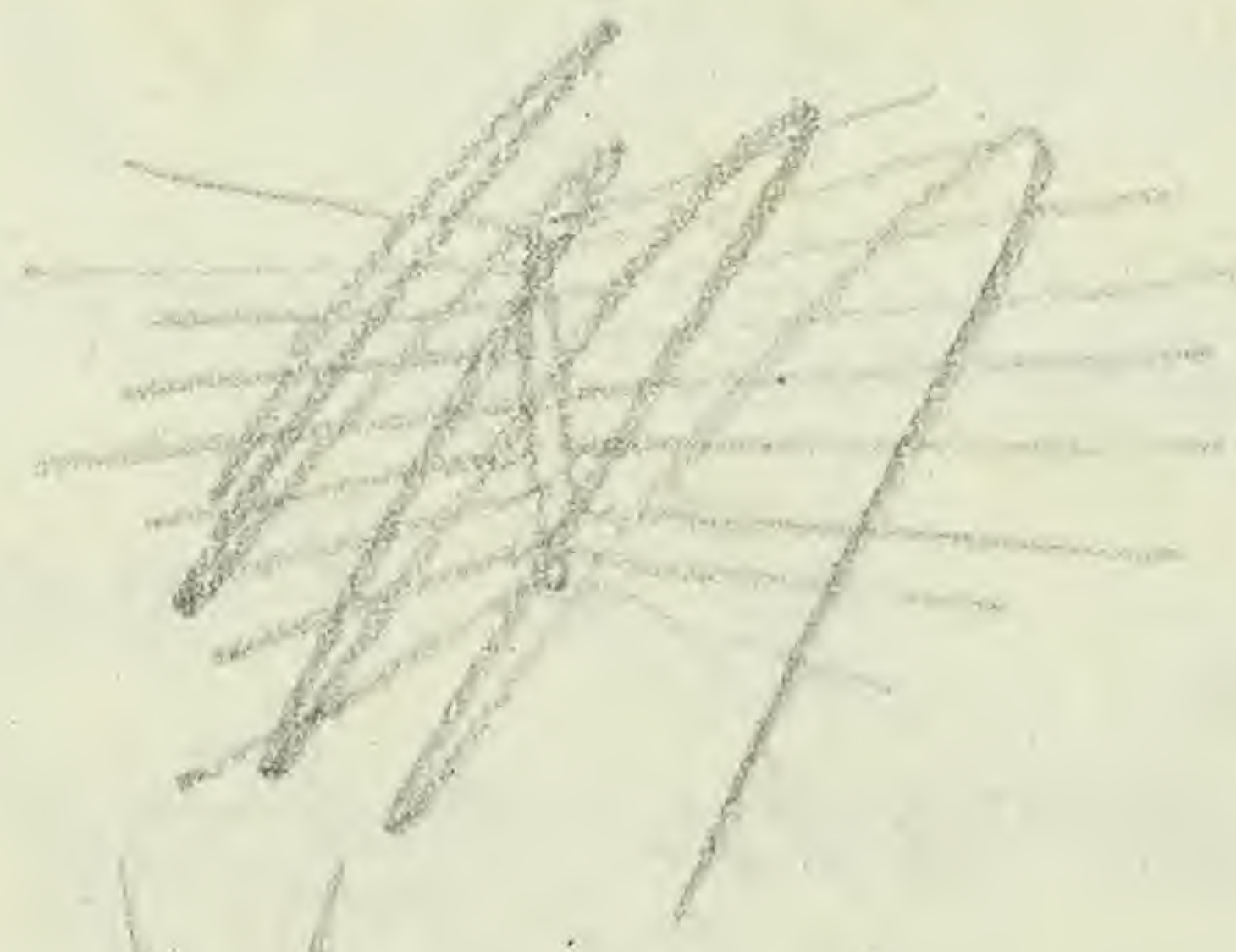


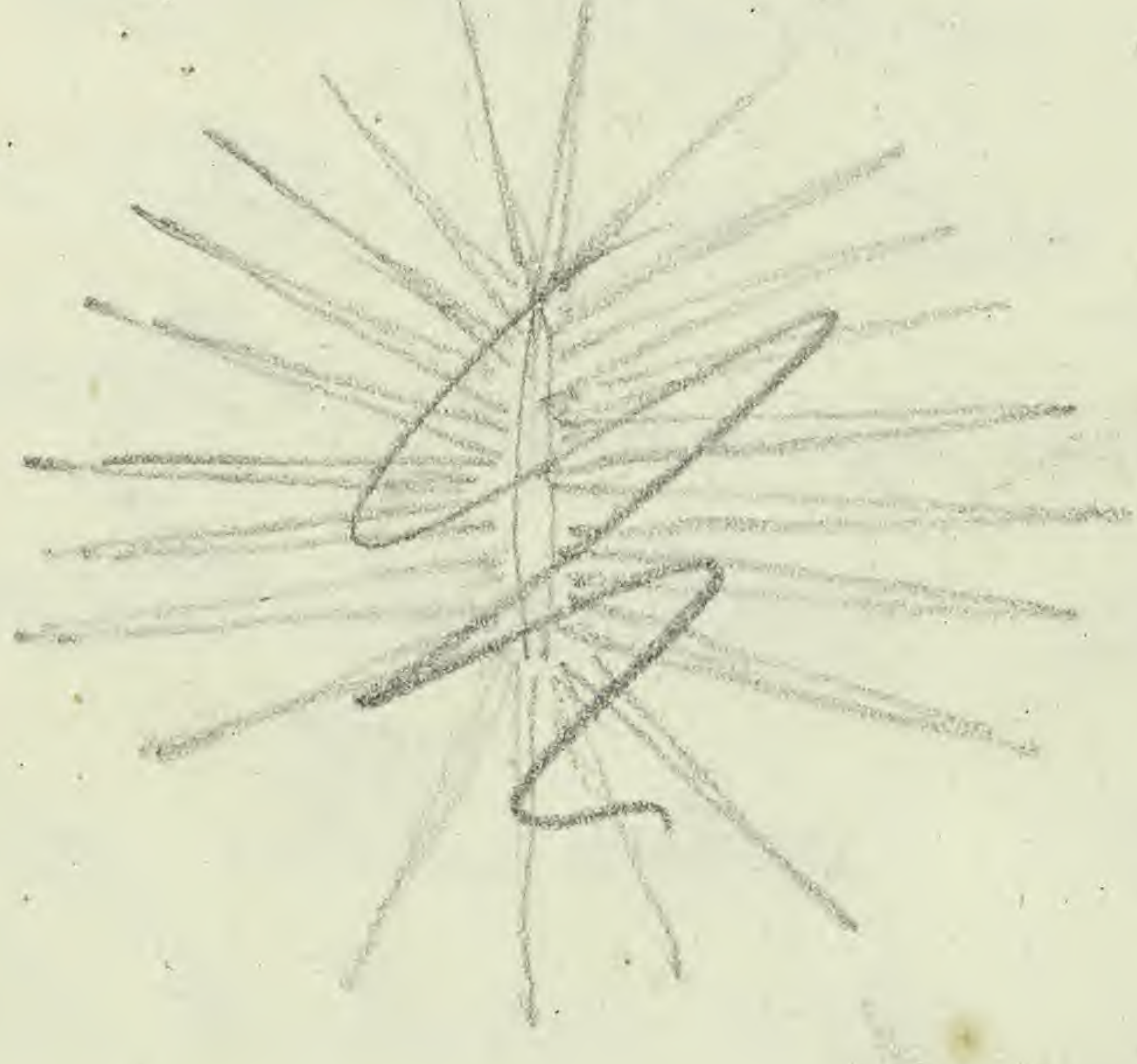


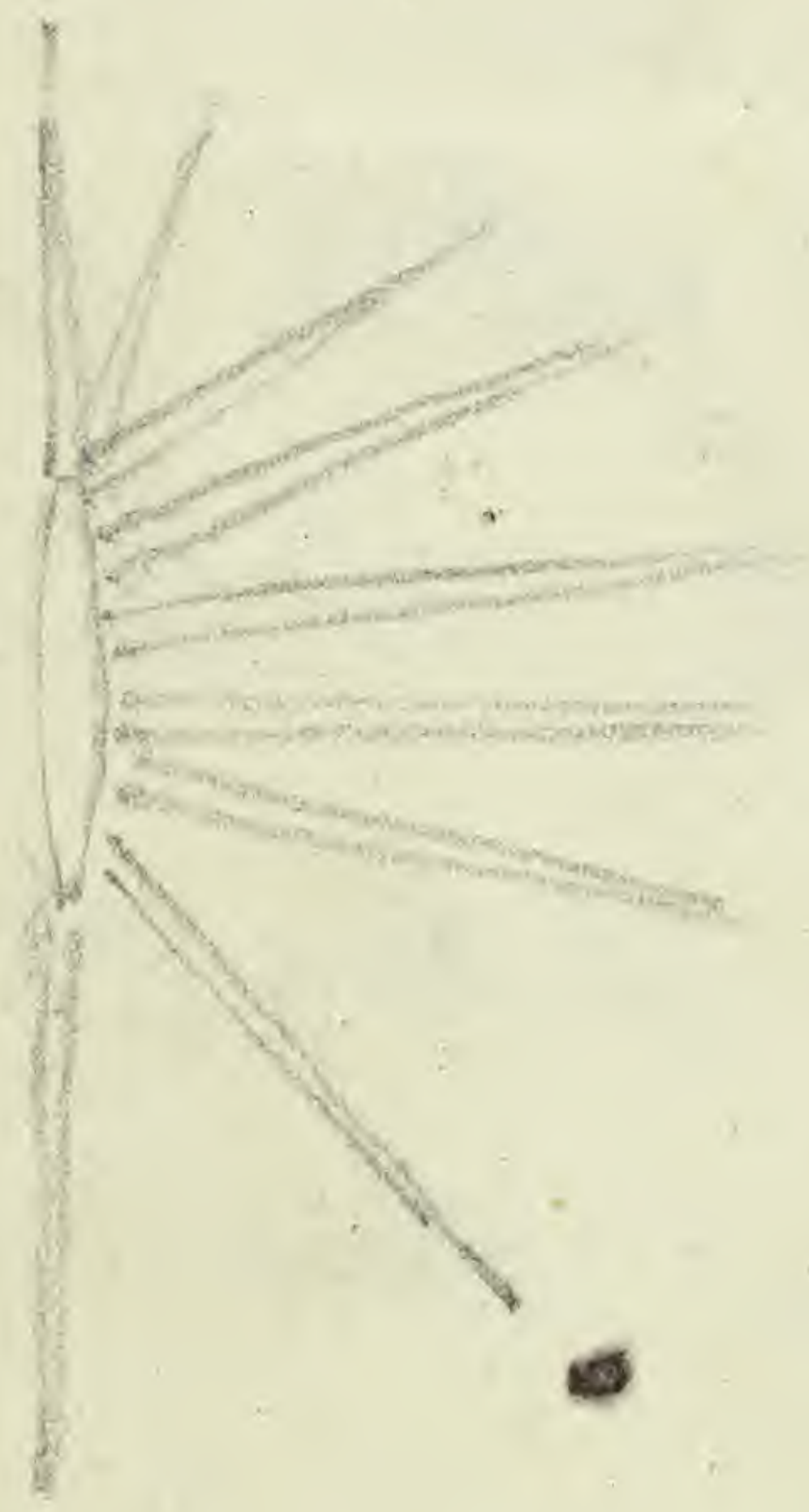
pictus.
Cereus ~~[illegible]~~.
20 — 22 ribs.—
Now C. seneciput. mihi.

14403

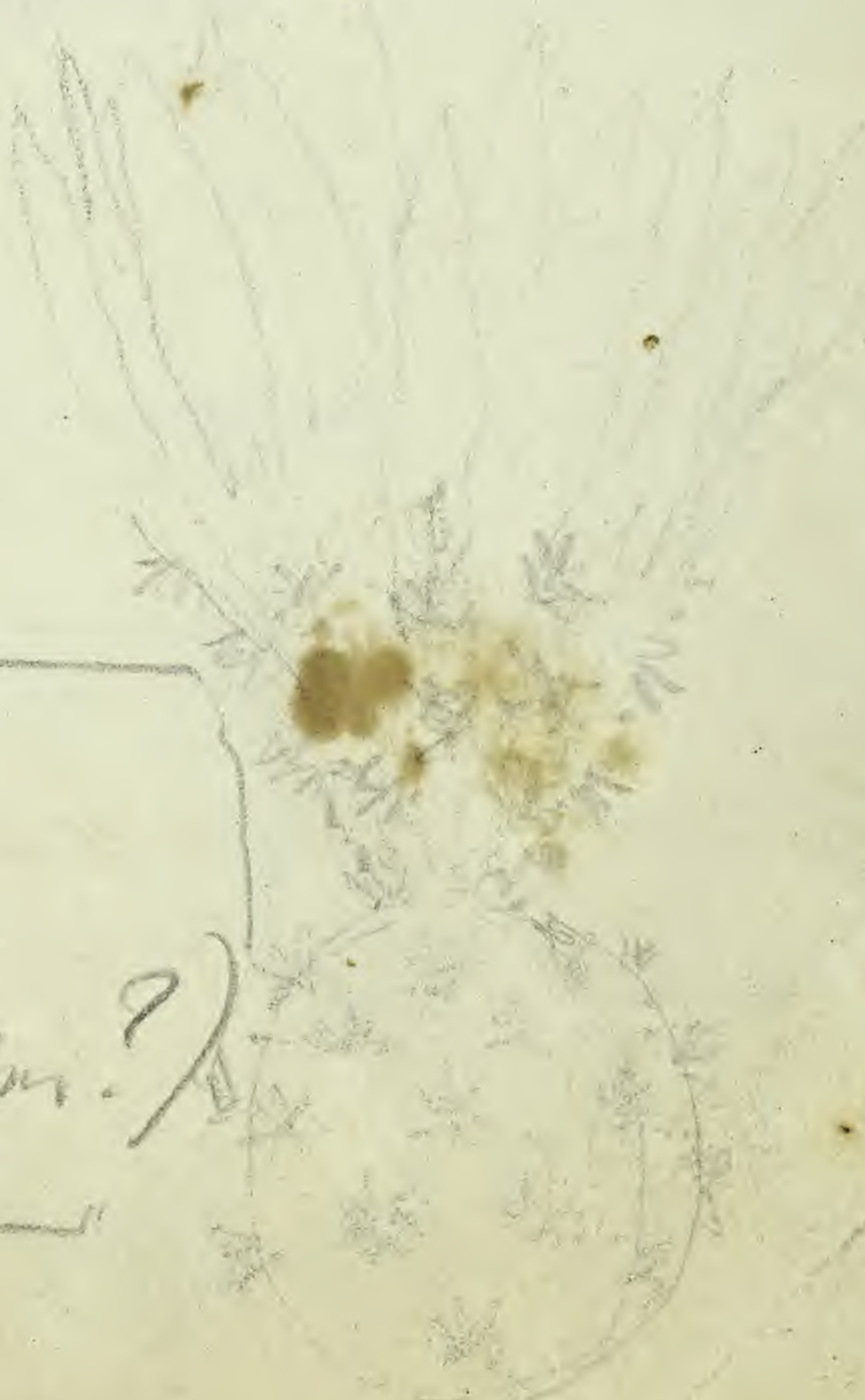


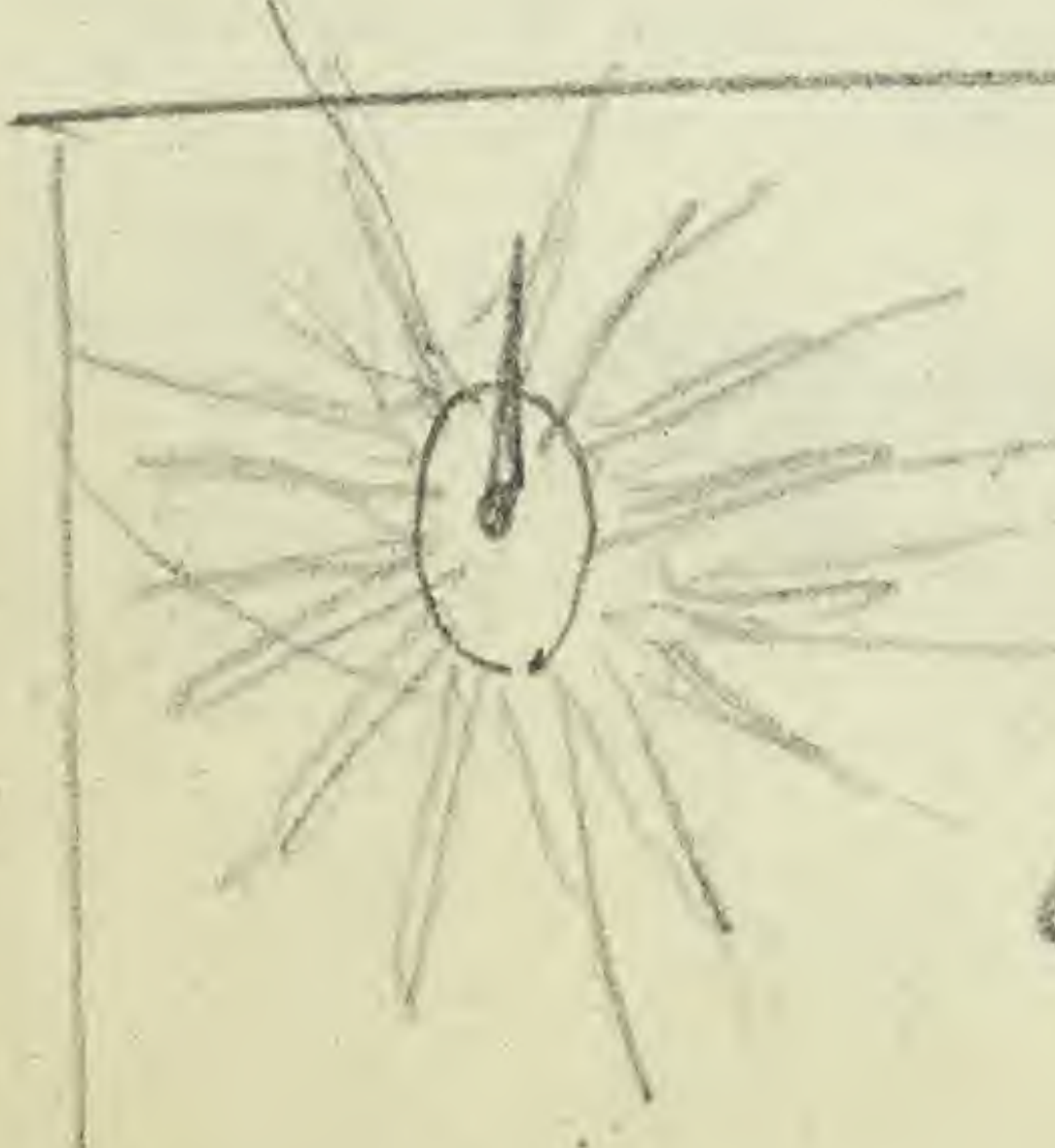






12–16–17.
spines





~~stem~~
areola of
C. cespitosus Engelm.?)

rose or pink color.

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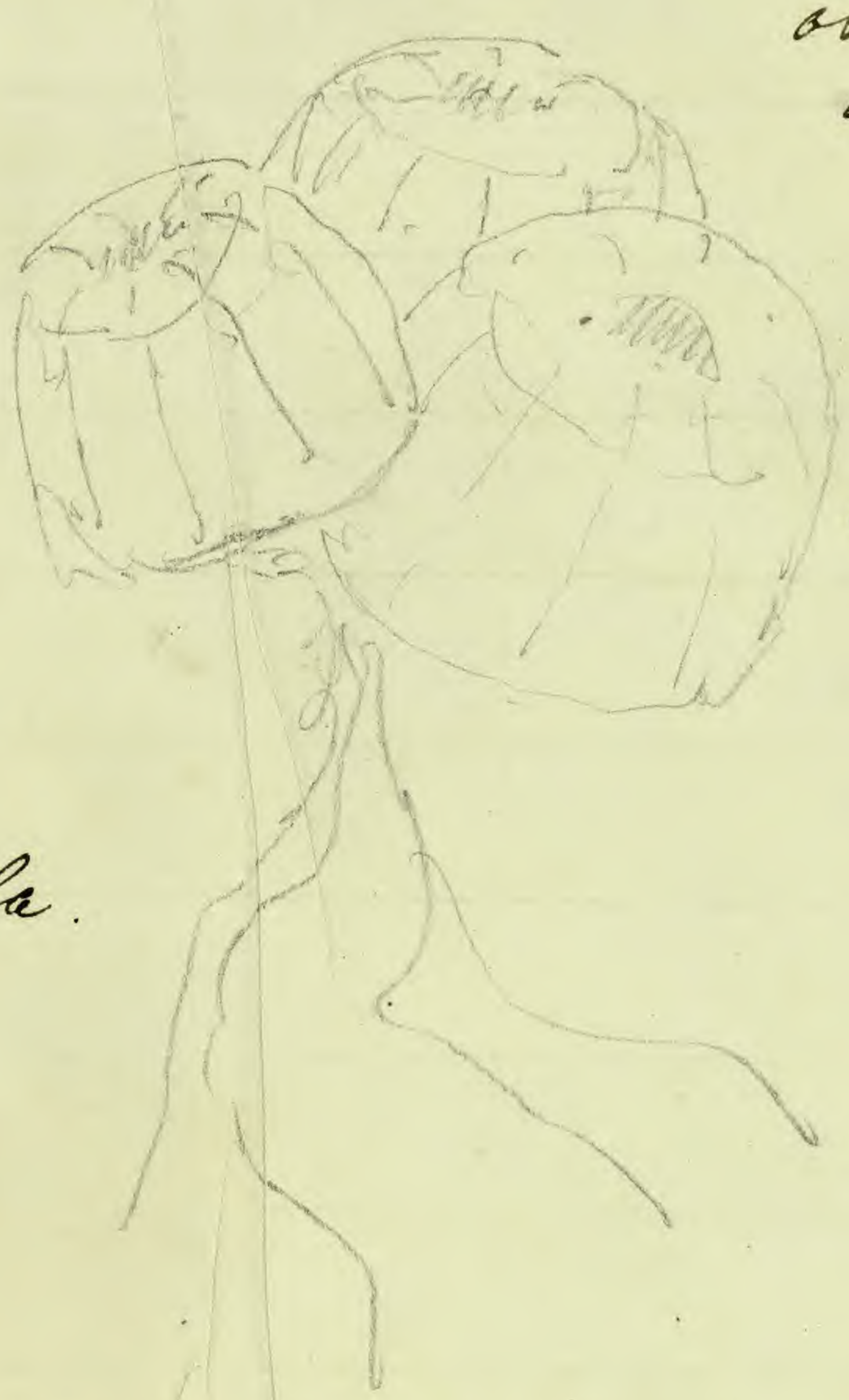
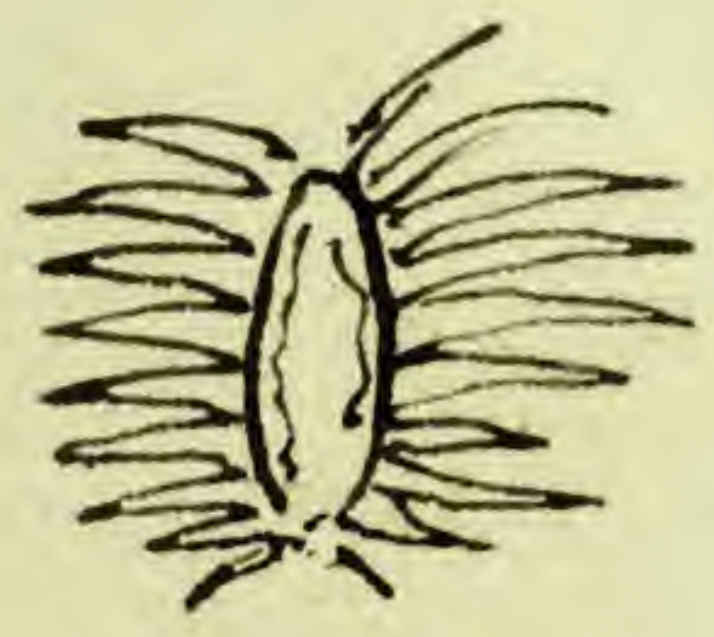
Cereus albispinus. (mihi)

Plant cespitose, dark green spines short white.

13 ribbed, cespitose heads

obtuse conic appear ex-cavate.





Areola.

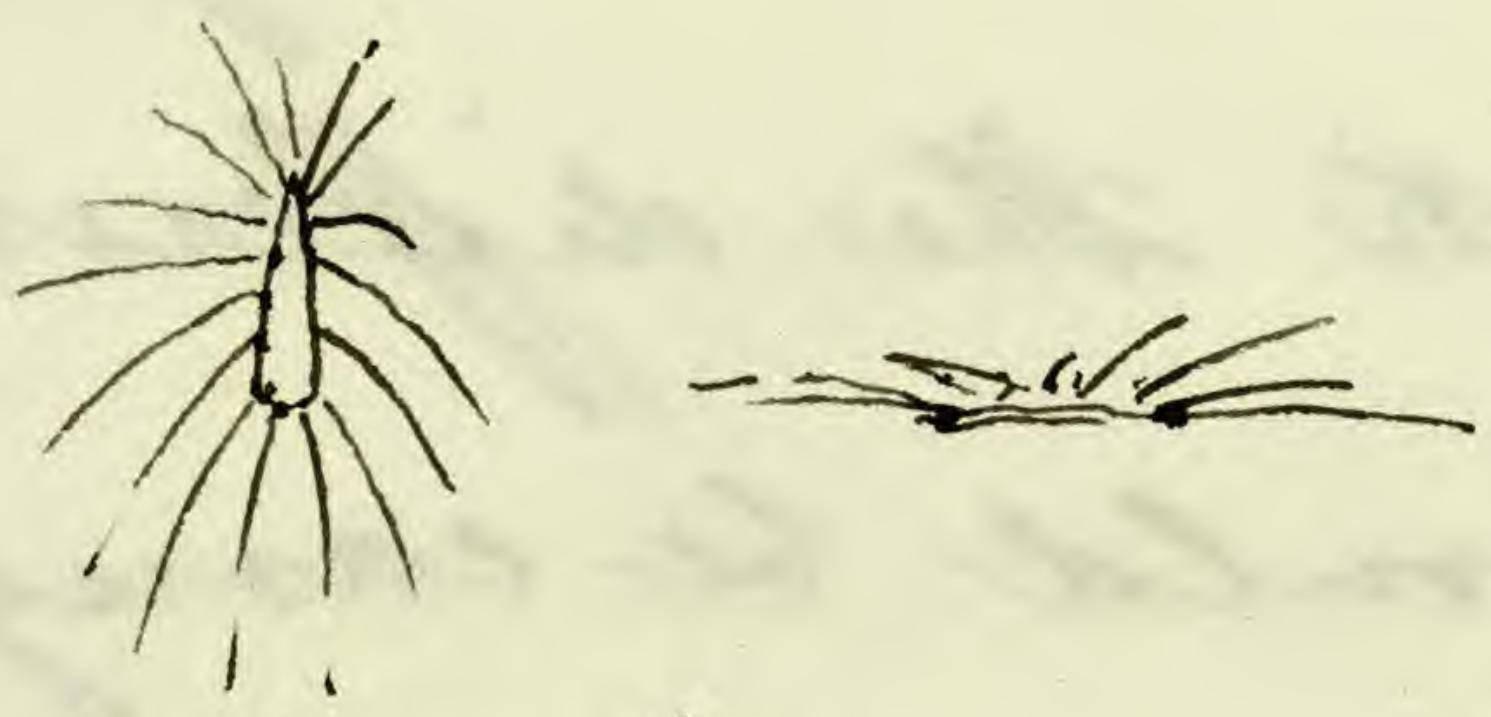
Head of rio San Pedro.

14404

caespitosus E

No ~~7~~ 8 Cereus dipsacus. (mihi)
C. cespitosus of Dr. Bigelows living collection
in the public gardens ~~here~~ at Washington DC.

Cylindric, apex obtuse, 13 ribbed; ribs little interrupted areolas 2''' distant; areola ovate-lanceolate; spines all radial 14–18 ~~spines~~ or more spines, adscendent-recurved, lower spines longest to 3'' upper shortest. Sp. horny yellow tinged and tipped with purple



areolae

Root fibrous.

Flowers and fruit not known to me.

Locality between Escondido spring and Pecos river.
West-Texas.

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No 9.

No 9. Cereus pitahayita. (mihi)

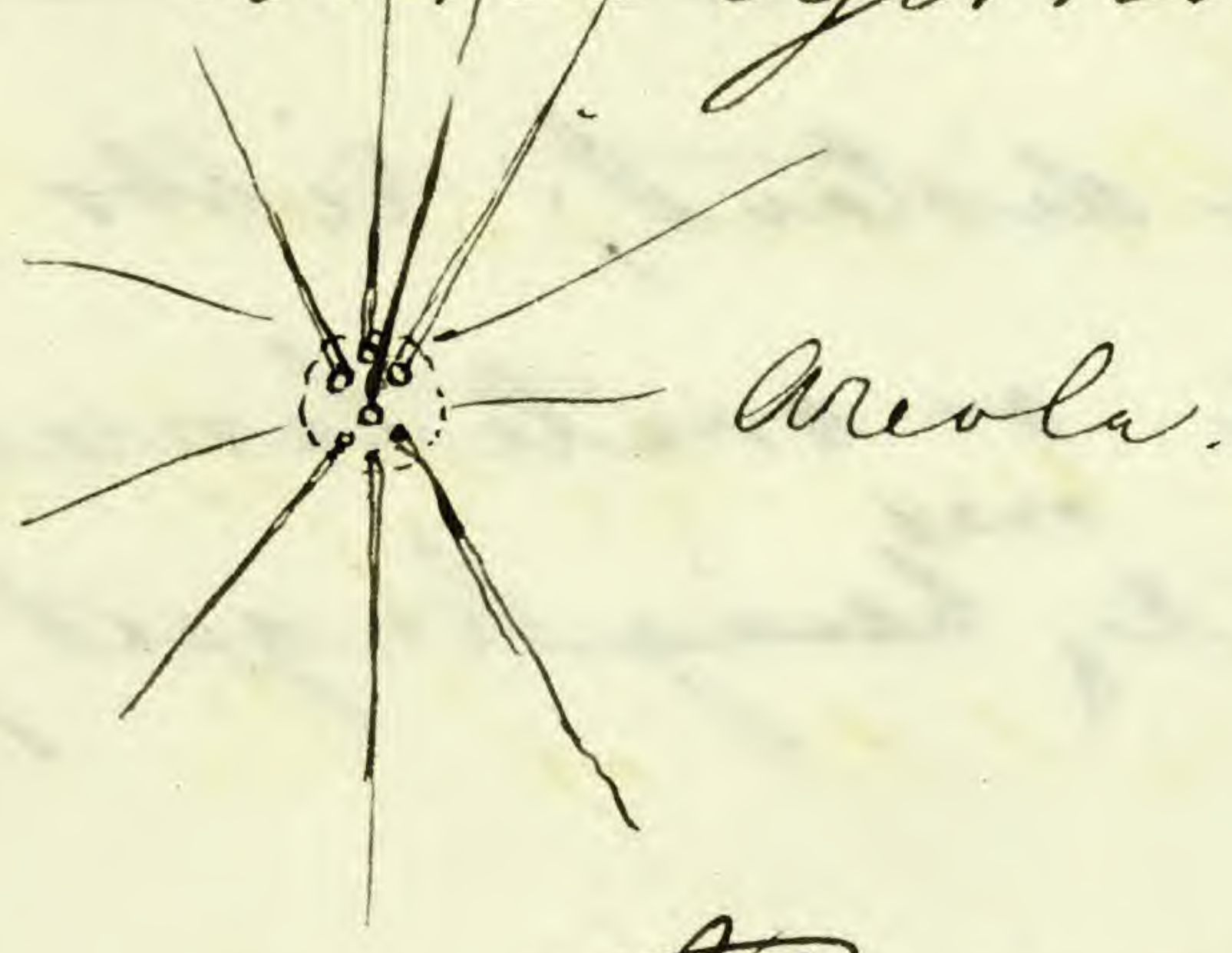
d'. Cespitose and in habitus, number of ribbs, ~~and~~ areola and spines almost identic with the species on the lower Rio Bravo, known as Cucumberplant, for which I ~~but~~ took it in the remote locality of the sierra del pajarito (Sonora) Seeds, with the dry bacca~~te~~ and persistent red flower are at hand. Part of them was transmitted to You. I think the difference between these different species would be enough to pronounce the Cereus pitahayita a new species, be it with this or an other name. To my C. hystrix the C. pitahayita bears ~~no~~ but a general resemblance whilst even a more practized eye will easily mistake it for the cucumberplant.

I am sorry to say, that a small living species ~~being place~~ arriving here must have been lost under the hands of one of the hands in the public gardens.

?

No 10. Cereus decacostatus. (mihi)

Conic-cylindric; subcespitose 10 ribbs; cespitose or nearly so



Flower & Fruit not known to me.

I believe its is one of those Pitahaya bearing cerei, the pulp of their bacca is more sower and therefore called by the Mexican of the rio Bravo valley „Pitahaya agre."

I brought home one living species now in care of the public gardener measuring 12" high & 4" diameter.

Locality South range of sierra de los organos, near Fort Bliss. West-Texas.

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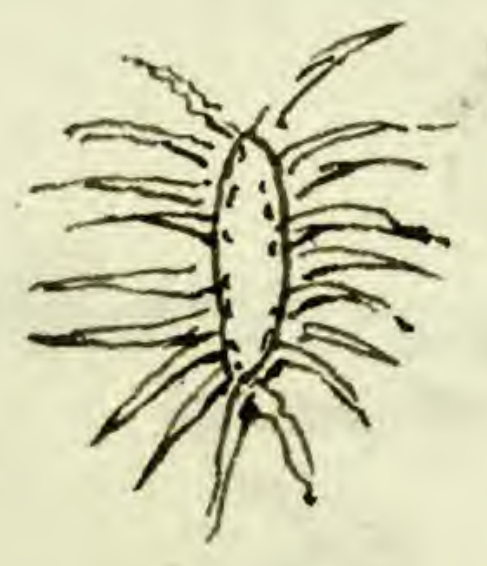
caespitosus E

12. Cereus albispinus. (mihi)

Obtuse-conic, cespitose; length and diameter almost alike 1); 13 ribbs; ~~dark green~~ areolae 3''' or more distant; ribbs deeply interrupted; Areola linear-lanceolate or ovate lanceolate spines short, ~~west and~~ ~~las~~ the lateral ones ~~being~~ longest from 1–1,5''' pure white and harmless.

The shape of the areola with the spines reminded me as to name this species „pediculairs".

No flower or fruit known to me.



Locality. Head of rio San Pedro in West-Texas.

1) The living specimen here ~~show~~ are nearly 2+2'!

Cactaceae. Mammillaria. C 3.

1. Mammillaria tenuispina (mihi)
= M. Grahamii Engelm. already known.

Mam tenuispina = M. Grahami
patens = M "
arachnoidea = M. recurvispina n. sp
robustispina ! n. sp
vide Dieboli = M. macromeris
strobiliformis = M. radiosa
acicularis = M tuberculata
pyramidata = M gummifera ?
longimamillifera = radiosa ? !

recurvispina E

2. *Mammillaria arachnidea* (mihi)

Cabezito del viejo, (mexic) Greyheadlet, Oldmansheadlet, (engl.) Greisen= oder Greisenköpflein (german)

Globose or subglobose; appex somewhat applanate 6–8" diameter; mamillas ~~somewhat~~ more or less compressed densily arranged and covering each other like scales, subsquamose; Areolas ovate-lanceolate & tomentose when young. Spines, one central 6–8''' long radial sp. 12–14; ~~or all the sp.~~ like the former contorted recurved, white & brown towards the point; transparent when young. central spine 6–8''' long radial 2–3.''' Sutura naked and perceptible to the base of the mamilla. Flowers somewhat campanulate, irregularly distributed over the appex with an inclination to appear towards the perigonium. petals bright lemonyellow darker & with a brownish tint along the midrib.

Flesh like that of Cereus senecipnt (mihi) eatable and used by the inhabitants of the country.

Locality. Eastern parts of Pimeria alta especially in the sierra del pajarito.

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14406

3. Mammillaria patens. (mihi)

= M. Grahami E

Growth in loose spreading bunches, therefrom the name I gave.

Of this plant but one dead dry specimen was found in the Gila valley near the Pimo villages.

I send part of it to look at.

In the public gardens here I saw some days ago a living specimen~~s~~ of this ~~[illegible] [illegible]~~ much resembling species.

No flower no fruit.

[illegible]

4. Mammillaria robustispinae. (mihi) !

Growth cespitose; mammillas distant one inch long or nearly so; Sutura very much marked and densily tomentose like the areola.

Spines two central, upper incurved.

Radial spines of ~~lightbrown~~ above ~~tan~~ lightbrown deeply shaded and pointed by darkbrown reverseside whitish. Spines ~~and~~ 1'' long, a very stout especially the central, on thy base of nearly 1''' diameter.

Flowers 1,5'' long, tube very narrow, corolla campanulate. Petals bright Safron yellow.

The only specimen I found in grassy llanos near the Sierra Baboquivari was seemingly mutilated by prairiefire, thus the parts of it do not make much show.

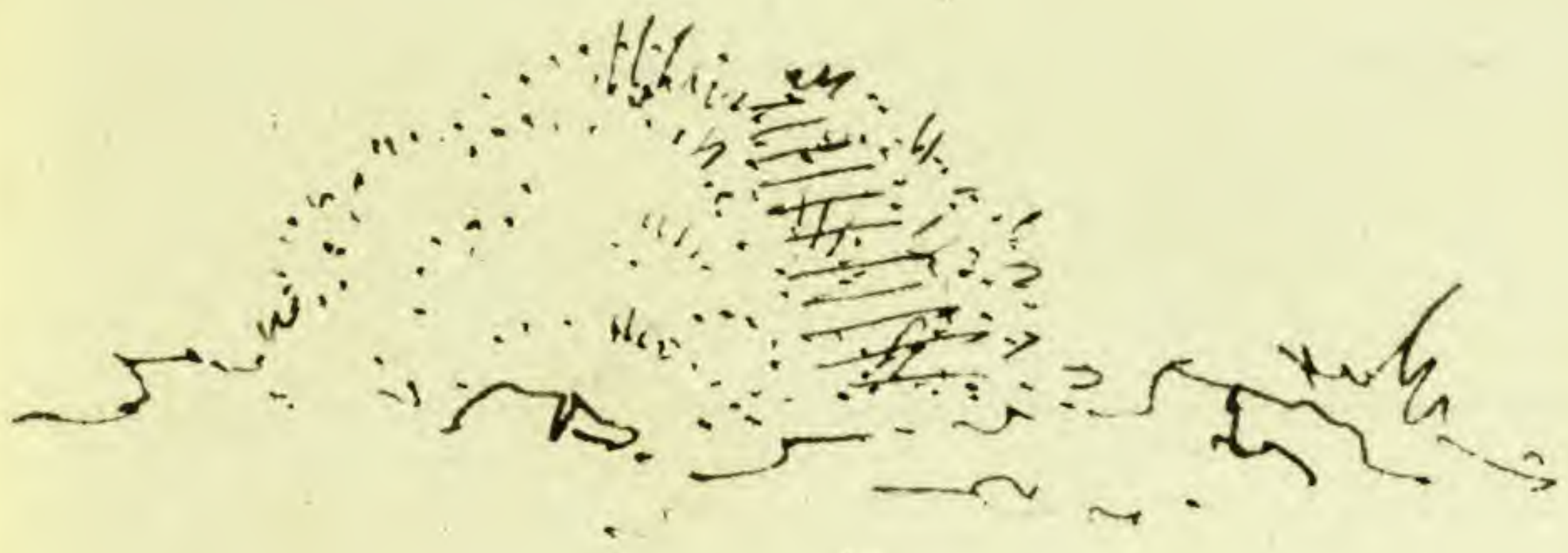
The unripe seed I sent under the name M. rigidosp. can not be but identical with the above.

Mammillaria nidus diaboli.

mihi.

before M. stalagmites. (mihi)

Living specimens.



Tuft consisting of 50–60 heads.

Locality: Escondidospring on the other Side of Puercosriver.

A. Schott

14407

Cactaceae. Mammillariae. Macromeris? A

5/ Mammillaria nidus diaboli. (mihi)

Growth. Hemispherical tuft of 50–60 heads, arranged very close together.; whole mass 1½ foot in diamet[er] and 6 inches high.

tubercles long (& taper); 3–5 central and as many radial spines; long & slender

This plant shows itself from a distance ~~as~~ soft almost velvet-like, but being approached it looks rather unhospitable like all the other of this order. Thus I selected its name, though it might be Your M. aggregata.
Emorys Report 1848. Appendix pag. 157. & Fig. 1.
Locality. Few miles below Escondidosprings one days march above leaving the Puercosvalley. Western Texas.

I send one living specimen

radiosa var neo mexicana

No6. Mammillaria strobiliformis. (mihi)

Ovate-~~conic~~ conic (strobiliformis) 1,5 – 2" + 3" high. Root fibrous. Tubercles distant, attenuate to 1" long. Sutura on the younger mamillas subtomentose. Areola round convex wooly; central spine 1 horizontally inwards turned ~~where~~ on younger tubercles, vertically upright on the older, strict tendency to run appressed with the other radiate spines. The latter like the former of a light ~~colour but~~ and ~~afl.~~ during ~~the~~ course of time ~~growing older the getting~~ a brown toast-color. Radial spines 25 – 30 stout and ~~straight~~ straight. in 2 – 3 rows the upper from 6 – 8 lines long. Flowers persistent. apparently red, placed in the centre of the appex, bacca oval greenish-yellow.

Locality. El Podrero near 111° longit. 32.20° latitude on the northern slope of Sierra del pajarito.

In habitu much resembling to M. acicularis (mihi) the areola of which is however covered with smaller more slender bristlelike pure white spines, which are arranged more fasciculate. Mamillas of this are also arranged compact, inflorescence not confined to the centre of the appex but appearing more towards the perigonium.

M. strobiliformis (mihi) shows its longest spines on the upper part of the areola whilst M. acicularis has them on both sides

I send one living specimen.

14408

MISSOURI BOT[ANICAL] GEORGE ENG[ELMANN]

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7) Mammillaria longimammilla? see longimammillifera (mihi)

Of this species I met only one specimen near the Camp at Howardspring (San Antonio – El Paso road). I tried to secure it as a livespecimen but ~~must~~ must have lost it again.

I enclose herewith a sketch of it copied from the one ~~in~~ made on the spot.

Mammillas nearly 1" long not very compact arranged, dark green.

No flower or fruit.

12 radial & 6 central sp.

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tuberculata

No 8. Mammill~~fera~~aria acicularis. (mihi)

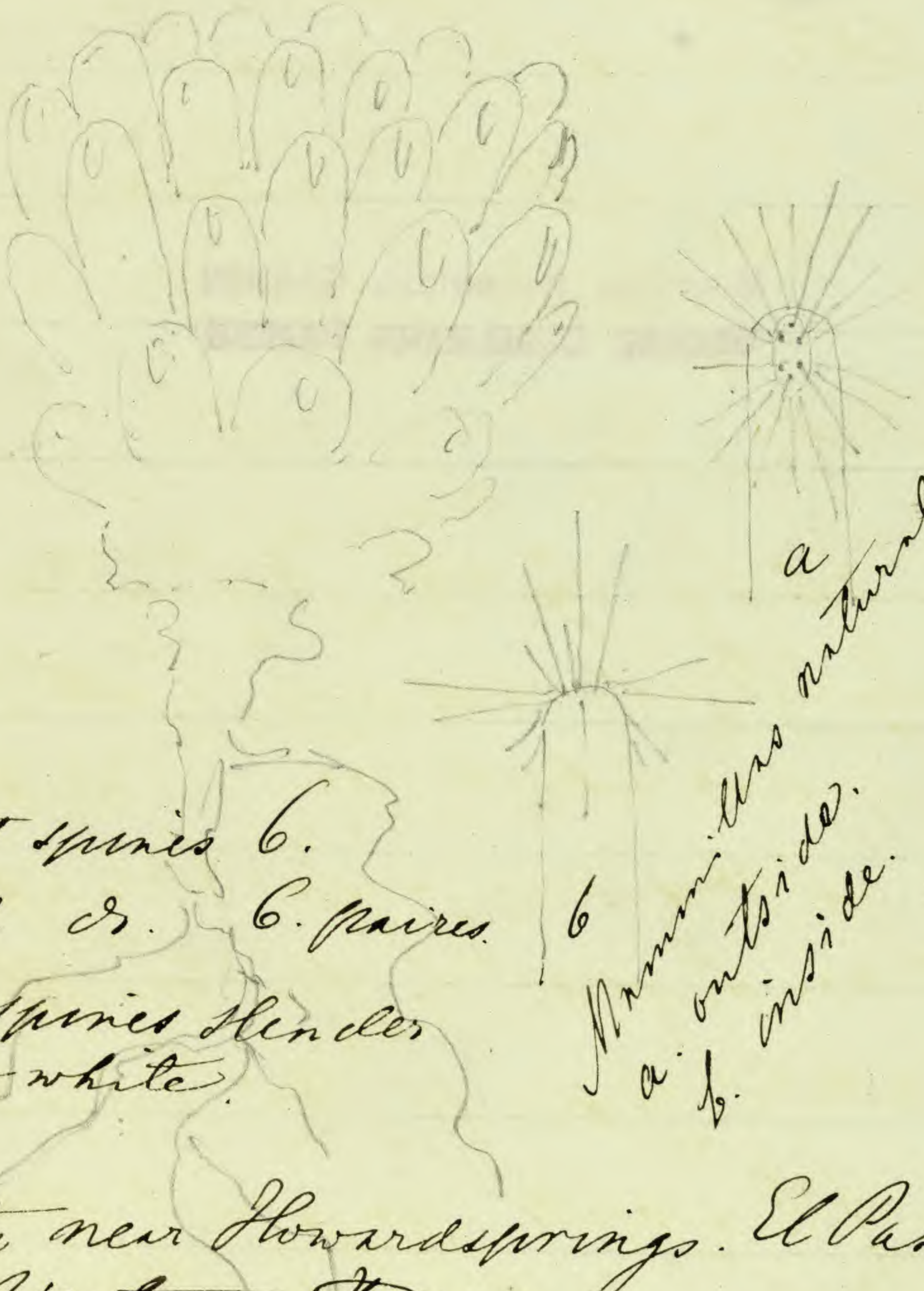
Conic with a ~~little~~ broader base then No 6 to which it bears in habitu some relationship. 1 – 2" high. Tubercles very closely arranged; 1 – 3 stront ~~straight~~ upright central spines 6''' – 12''' long, light brown ~~dark~~ with a darker point. 30 – 40 radial spines in 2 – 3 rows, bristlelike, white & 3 – 4''' long. Inflorescence on the perigonium.

Root fibrous.

Locality. Southrange of Sierra de los Organos near Fort Bliss. West-Texas. with Cereus rigidispinus or C. crassus (mihi)

I send one living specimen. & fruit

No 7. Mammillaria longimamilla. mihi.



central spines 6.
radial do. 6. paires.
all the spines slender
greyish-white.

Mammillas natural size
a. outside.
b. inside.

Locality near Howardsprings. El Paso road. Western Texas.

Arthur Schott

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14409

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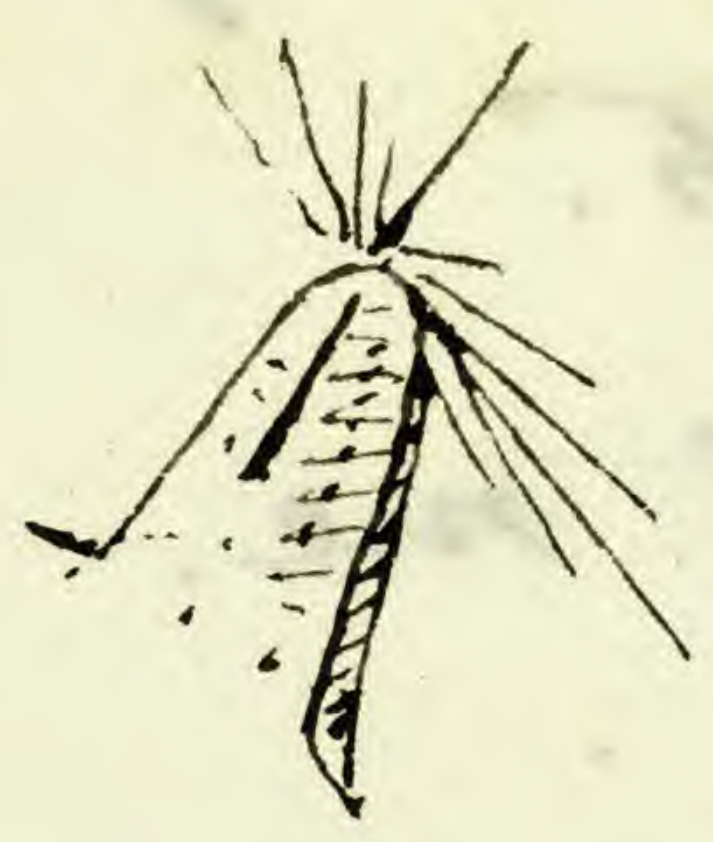
5

No 9. Mammillaria gummifera ? prismatica (mihi)

sessile of 4–5" diameter.

Applanate // Spines atropurpurescent; 1 central spine; 13 radial. Carpels sessile ex centro deeply imbedded between the tubercles, which are densily arranged.



Tubercles pyramidical obtuse angular.

~~Spines~~ Outer or ~~outer~~ lower radial spines longest to 6-8''' long; interior or upper spines 2–3''' long. central spines short 2–3'''.

Baccas bright crimson color.

Locality. Sierra del pajarito. Sonora. near 111° long. 32.20° lat.

The living specimens procured had to be abandoned again by circumstances.

14410

10. Mammillaria excavata (mihi)

In habitus near allied to No M. no 9. Size, shape of its tubercles being very much alike. The centre of [illegible] M. excavata however is deeply excavated forming a funnelshaped groove of 1" depth.

Flower and fruits unknown to me.
Locality with No 9.

Living specimens procured had to share the fate with those of no 9.